

THE CZECH REPUBLIC, HUNGARY, POLAND, AND SLOVAKIA

By Walter G. Steblez

The Central European transitional economy countries of the Czech Republic, Hungary, Poland, and Slovakia represent one of the more economically dynamic regions of the former centrally planned economy countries of Europe and Central Eurasia. As founding members of the Central European Free Trade Agreement (Bulgaria, Romania, and Slovenia joined in 1999), these countries have continued to implement policies designed to harmonize standards and trade with a view to integrate themselves fully into the European Union (EU), as they had done already in the European security sphere through membership in the North Atlantic Treaty Organization. To accommodate new standards, the development of new commercial infrastructure in the region has warranted continued focus on the region's cement, industrial minerals, and steel industries. The trend of large-scale foreign investment in the cement and associated quarrying industries in the Central European region, which emerged during the 1990s, also became more clearly discernible in the region's iron and steel sectors during 2001.

CZECH REPUBLIC

The Czech Republic was an important Central European producer of heavy industrial goods manufactured by the country's toolmaking, machine building, and chemical industries. Steelmaking, the mining and processing of industrial minerals, and the production of construction materials continued to be of domestic and regional importance.

In 2001, the country's economy continued to improve. The gross domestic product (GDP) increased by 3.3% compared with that of 2000 (Emerging Europe Monitor, 2002). Industrial production increased by 6.8%. According to data provided by GEOFOND, which was the country's leading mineral information agency, the mining and processing sector's share of the GDP declined to 1.5% in 2000 from 3.7% in 1993 (GEOFOND, 2001, p. 171). In 2001, the privatization of the iron and steel sector continued dominate events in the country's minerals industry.

Government Policies and Programs

The Government continued policies of economic development the aim of which has been to integrate the country into the EU. The country's membership in the International Monetary Fund, the Organization for Economic Cooperation and Development (OECD), the World Bank for Reconstruction and Development, and the World Trade Organization (WTO)

and participation in the General Agreement on Tariffs and Trade was largely an outcome of the Czech Republic's full orientation to a Western European political system and market economy.

Three constituent acts compose the country's mining law, which forms the foundation of the Government's mining and other mineral-related policies. Act No. 44/1988 Coll. on protection and use of mineral resources (the Mining Act), as amended; the Czech National Council Act No. 61/1988 Coll. on mining activity, explosives, and state mining administration (Authority/Sedenka), as amended; and the Czech National Council Act No. 62/1988 Coll. on geological works, as amended. The Mining Act classifies minerals into either "reserved" and "unreserved" categories. The reserved category refers to mineral deposits that, apart from market considerations, were determined to be necessary for the development of the national economy (Luks, 1997; GEOFOND, 2001, p. 17). Other provisions in the mining law address issues of licensing and Federal and regional compliance with environmental regulations during the exploration and exploitation of a mineral deposit and the reclamation of mined-out areas.

To meet the needs of a developing market economy, major changes in the Czech Republic's environmental policies were enacted in 1997. On the basis of environmental principles that were approved by the Government in 1995, the new policy was officially formulated in the environmental law of 1997, Act No. 125/1997. Also, four of the six enabling provisions of the new law were formally adopted at the same time as the new law on January 1, 1998. The environmental law focused on reducing the volume of waste, discreet collection of waste by category, and recycling. The law adopted the main provision in EU and OECD regulations as well as those of the Basle Convention. The new catalogue of wastes is compatible with the European Catalogue of Wastes of the EU.

Production and Trade

In 2001, the iron and steel industry, which constituted the major part of the country's metallurgical sector, showed production increases in pig iron (1.2%), crude steel (1.6%), and steel semimanufactures (8.7%). With respect to the raw materials inputs to the iron and steel industry, the Czech Republic largely remained dependent on imports. The country no longer mined iron ore and, according to 2000 trade data, depended mostly on Ukraine (80%) and Russia (19%) for imports of iron ore and concentrate. In 2000, total imports of

iron ore were more than 6.9 million metric tons (Mt), which was an increase of about 29% compared with that of 1999 (GEOFOND, 2001, p. 22). Net imports of pig iron amounted to about 33,000 metric tons (t). The Czech Republic, however, was a significant net exporter of iron and steel scrap, which amounted to about 804,000 t, or an increase of about 12% compared with that of 1999.

Although the output of the mineral fuels sector remained at about the same levels of production as in 2000, the output of industrial mineral registered mixed results. Major production shortfalls were reported by the cement-producing (13%) and dimension-stone-quarrying (12%) branches that were key to the country's construction sector. Such other industrial minerals as feldspar (22%) and undifferentiated clays (21%) reported better production results for the year (table 1).

Commodity Review

Metals

The Czech Republic's metals sector produced a broad range of base metals and semimanufactures from imported primary raw materials (ores and concentrates) and secondary materials (scrap). The metals sector generally has represented approximately 10% of the value of the country's industrial production during the later part of the 1990s. The iron and steel branch alone has generated between 8% and 9% of the industrial output. Employment in the metals sector accounted for about 10% of the Czech Republic's industrial workforce; the iron and steel sector accounted for about 8%. In recent years, the iron and steel industry's material costs have constituted about 60% of total production costs of the metals sector, and labor costs have amounted to about 12% (Ambroz, 1997).

The iron and steel branch also has accounted for more than 75% of the sales of the country's metals sector that comprised 12 enterprises. They produced pig iron, crude steel, rolled materials, and steel and cast iron pipes, which included closed welded pipe steel and various welded semimanufactures. The nonferrous metals branch, which comprised nine major enterprises, produced finished and semifinished commodities of nonalloyed and alloyed aluminum, copper, and lead. The nonferrous metals branch has relied entirely on domestic and imported scrap and on imports of ore and concentrate and semimanufactured products as its raw materials base. In recent years, scrap, as a component in all new metals production, has ranged between 40% and 50% (Urban, 1998).

Although gold mining in some parts of the Czech Republic remained prospective, economic resources of most metals have been depleted. According to GEOFOND (2001, p. 19), most of the country's metallic mineral deposits as of December 31, 2000, were not economic. Gold-bearing and tin-tungsten ores were among the exceptions.

Copper.—The Czech Republic imported copper to meet all its industrial needs. From 1998 to 2000, copper imports remained steady and averaged more than 14,300 t. In 2000, imports of refined copper and copper alloys amounted to 14,223 t; Poland, Austria, and Germany supplied 43%, 29.8%, and 24.9%, respectively, of total imports. From 1996 to 2000, the country

apparently was a net exporter of copper scrap; exports ranged from about 24,600 to 34,000 t (GEOFOND, 2001, p. 30-31).

In 2001, significant events in the Czech Republic's copper industry included plans to shift the orientation of production at Kovohuti Rokycani AS away from copper and copper alloy foundry products to the output of finished materials. Kovohuti Rokycani, which was a leading Czech manufacturer of semimanufactured and wrought commodities of bronze, copper, and nickel, indicated that the transition was to be implemented gradually during several subsequent years (Metal Bulletin, 2001a). Additionally, Kovohute Calakovice AS, which was the country's major processor of copper scrap, implemented investment plans that included the addition of two new furnaces and the modernization of the plant's three presses. The company's management expected the investment program to raise efficiency that would not only increase profits, but also raise domestic market share to 80% from 75%. The company has produced more than 12,200 t/yr of copper rod, pipe, and wire (Metal Bulletin, 2001h).

Iron and Steel.—The Czech Republic had eight deposits of iron ore that were determined to be uneconomic and no longer were worked. All the raw materials consumed by the country's steel industry—iron ore and concentrate and pellets and agglomerate—were imported. In 2000, about 7 Mt of iron ore and concentrate was imported, mainly from Ukraine and Russia, which accounted for about 80% and 19%, respectively, of total imports. Net imports of pig iron amounted to 33,000 t, and net exports of iron and steel scrap amounted to more than 800,000 t (GEOFOND, 2001, p. 22). Manganese, which is of prime importance to the steel industry, was obtained entirely from imports of ores and concentrates (10,436 t; Ukraine, 63%), ferromanganese (17,569 t; Slovakia, 50%), and ferrosilicomanganese (22,300 t; Slovakia, 53%) (GEOFOND, 2001, p. 26). The steel industry operated eight steel plants with a collective capacity to produce almost 11 million metric tons per year (Mt/yr) of steel. The main steel producers were Nova Hut s.p. Ostrava (NH), Zelezarne Vitkovice a.s., Trinecke Zelezarny (TZ), and Poldi United Steel Works and accounted for more than 95% of total crude steel production capacity.

The restructuring and privatization of the Czech Republic's entire iron and steel sector were among the major issues during 2001. The reorganization of the steel industry was based on a study commissioned by the Government, which was completed by a group headed by the Czech and Slovak Steel Federation in October 1999. The Government's plan to implement the first phase of the restructuring program included a 20% reduction of steel production capacity that was to result in the closure of 17 furnaces, 10 of which were electric arc furnaces, and 17 rolling mills. The closure cost was estimated to be about \$96.7 million, and the total cost of the restructuring plan would cost about \$2 billion. NH, TZ, and Vitkovice were also the country's integrated producers of steel that accounted for more than 90% of total steel output; these large enterprises also pursued individual development plans to be able to compete in the EU market (Walawalker, 2000).

The rationalization of the iron and steel industry and the increasing foreign investor interest Czech ferrous metallurgy were among the salient issues of 2001. One of the

rationalization schemes of the Government for the steel industry involved the amalgamation of NH, TZ, and Vitcovice into one national iron and steel corporation that would have a production capacity of about 6.45 Mt/yr and would be privatized as a single unit. The plan envisaged the acquisition of NH and Vitcovice by TZ, which was privately owned. Previous suggestions to consolidate the industry were rejected outright owing to concerns of creditors that such restructuring could jeopardize outstanding loan repayments (Lansdowne, 2001; Metal Bulletin, 2001). The facility closure component of their plan was to include the medium section mill at TZ, a heavy section mill at NH, and a plate mill at Vitcovice.

By yearend, the plan had come under increasing scrutiny from the EU's European Commission, which raised questions about the viability of the plan in view of EU regulations that concern Government involvement and subsidy issues and the lack of an in-depth long-term economic analysis of the industry. The issue of privatization of the steel sector was not fully resolved by the end of 2001 (Metal Bulletin, 2001e, h).

Acquisition and merger activities during the year that involved TZ included a 10-year lease agreement with Zelezarny Veseli, that will allow TZ to operate Veseli's drawn steel rod mill. Feedstock, which ranged between 80,000 and 100,000 t/yr of steel, would be delivered from the main TZ steelmaking facilities (Metal Bulletin, 2001s). Also, in midyear, in anticipation of the proposed integration of the country's steel industry, TZ acquired an 11.5% share of stock in NH; this acquisition was supported by Commercial Metals International of the United States, which was one of TZ's shareholders (11% of shares) (Metal Bulletin, 2001r). Earlier in the year, TZ also considered acquiring the Poldi-Drin steelworks in Kladno whose rolling mill TZ leased and operated during the previous 3 years; the final outcome of its bid, however, was not known by yearend (Metal Bulletin, 2001q). Additionally, TZ and its majority stockholder, Moravia Steel a.s. (65%), merged into one operation as a further step in the restructuring process (Metal Bulletin, 2001t).

Vitcovice continued to implement a program of rationalization, which began in 2000. The plan included the divestiture of such noncore business-related operations as cafeterias, hotels, and stadiums. Following a change in management in July, the company's steel division was transformed into a separate corporate subsidiary (Vitcovice Steel) in anticipation of the steel industry's full reorganization (Bennett, 2001; Metal Bulletin, 2001j, u). In late 2001, there was investor interest from steelmaking concerns in the EU and the United States, although no firm offers were made (Metal Bulletin, 2001v).

At the start of the year, the privatization of NH, which would involve the sale of 67% of the company's shares (49% state and 18.25% Credit Suisse owned) was one of the major plans that were developed. Despite a renewal of interest by several European investors, which included that of Switzerland-based Duferco International Investment Holding Ltd., whose negotiations with the Czech Government in 2000 to acquire NH ended unsuccessfully, the Government put its plans to privatize NH into abeyance pending a resolution of the issue of total steel industry reorganization (Metal Bulletin, 2001b, c, f).

Disputes with unions about wage rates and with suppliers

over equipment quality were among other issues that affected NH during the year. The labor issue appeared to have been resolved in April (Metal Bulletin, 2001l, m). The dispute concerned equipment quality and involved NH's Steckel strip mill where it was alleged that the mill's equipment, which was delivered by Kaiser BV, was not in accord with specifications. The Steckel mill, which was operating at about 70% of capacity towards the end of the year, was losing money (Metal Bulletin, 2001k, o).

NH's investment activities in 2001 included the takeover of Valcovny Plechu a.s., which produced alloy, carbon, and stainless steel cold-rolled sheet. The takeover gave NH a 55.6% share of Plechu's stock (Metal Bulletin, 2001n).

Lead and Zinc.—Lead and zinc have not been mined in the Czech Republic for at least 6 years. The number of registered deposits declined to 11 in 2000 from 27 in 1995; none, however, were under exploitation during this period (GEOFOND, 2001, p. 35, 39). The primary source of domestic lead was recycled batteries collected and processed by the Czech Republic's sole recycler of secondary lead, Kovohute Pribram. In addition to secondary lead processing, Pribram indicated that the purchase of scrap that contained precious metals will increase and that their recycling (gold, palladium, platinum, and silver) would raise company profits (Metal Bulletin, 2001d).

The latest available trade returns showed that Germany supplied about 72% of the 53,000 t of unwrought lead that was imported by the Czech Republic in 2000. Net imports of lead for consumption amounted to about 40,200 t. Similarly, imports of unwrought zinc in 2000 exceeded 27,700 t; this was an increase of about 30% compared with those of 1999. Poland and Germany, which were the major zinc exporters to the Czech Republic, accounted for about 58% and 12%, respectively, of the total zinc imports (GEOFOND, 2001, p. 35, 39).

Magnesium.—Magnesium Elektron (a subsidiary of Luxfer Group of the United Kingdom) began operations at its new secondary magnesium processing plant in northwestern Prague in late October. The initial capacity was about 7,000 t/yr of magnesium. A second commissioning phase, however, was scheduled for 2002 and would raise the plant's capacity to 10,000 t/yr of secondary metal (Flux Magnesium Recycling Brief, 2002; Metal Bulletin, 2001i).

Industrial Minerals

The Czech Republic was well endowed with and produced a broad range of industrial minerals that met most of domestic construction and chemical industries's requirements, as well as those for export. The availability of these minerals at the recent average rate of mining ranged from about 37 years for gem-grade pyrope ore to more than 700 years for silica raw materials. Such corrective additives as clays, loams, loess, shales, and sands needed by the country's cement industry to regulate the content aluminum oxide (Al_2O_3), iron oxide (Fe_2O_3), and silicon oxide (SiO_2) during clinker production, in aggregate, were reported to have a mining life of about 830 years (GEOFOND, 2001, p. 83).

During the late 1990s, foreign investment in the Czech Republic's minerals industry focused primarily on the acquisition of cement plants and their associated raw materials quarries. Investment in Czech industrial minerals enterprises continued in 2001 with the acquisition of the Czech Republic's white-fused alumina producer Chemické Zavody Sokolov a.s. (CHZS) by Treibacher Schließmittel AG (Treibacher) of Austria. Treibacher, which was one of the world's major producers of fused alumina, planned to incorporate CHZS as Treibacher Schließmittel sro. Treibacher also planned to modernize the plant's production process. CHZS had been producing about 10,000 t/yr of fused white alumina, which is used in the manufacture of abrasives and refractory materials (Industrial Minerals, 2001).

Mineral Fuels

The energy policy of the Czech Republic has promoted the following aims: the decontrol of prices for energy; the denationalization, rationalization, and restructuring of the energy industry sector; an increase in the level of conservation, health and safety, and pollution control in the energy sector; the diversification of electricity, natural gas, and petroleum supply; and the raising of the efficiency of domestic production of fossil fuels. To help make its governmental and economic structures more compatible with those of the EU, the Government will proceed with harmonizing the country's energy sector's standards with those of the EU.

Coal.—Bituminous, or hard coal, occurs mainly in the Upper Silesian Basin. Of the resources in this region, only about 15% is in the Czech Republic; the balance of the resources is in Poland. Bituminous coal (phytokautobolite, as it is described in the Czech Republic's annual Mineral Commodity Summaries of the Czech Republic) has a higher degree of coalification than lower rank coals. Some of the characteristics of Czech bituminous coal include a carbon content of more than 73.4%, volatile matter of less than 50%, and a dry (ash-free) calorific value that exceeds 24 megajoules per kilogram (MJ/kg). As of December 31, 2000, the Czech Republic reported that the total resource of bituminous amounted to about 16.354 billion metric tons (Gt). Coal output in 2000 remained steady at just more than 17 Mt. Imports of 1.095 Mt were derived almost exclusively from Poland. About 6 Mt of bituminous coal was exported, mainly to Austria, Germany, and Slovakia (GEOFOND, 2001, p. 62, 63).

In addition to bituminous coal, the Czech Republic distinguishes two types of lower rank coal—brown coal and lignite. Brown coal has a lower level of coalification; that is, with a fixed level of carbon of less than 73.5%, volatiles of more than 50%, and a dry (ash-free) calorific value of less than 24 MJ/kg. The vitrinite reflective boundary between bituminous coal and brown coal is lower than 0.5% for brown coal. The boundary between brown coal and lignite, however, is not recognized owing to the inclusion of high volatile lignite in the brown coal category (GEOFOND, 2001, p. 67). The Czech Republic's brown coal deposits are worked in the northwestern part of the country in the Bohemian brown coal

basins. The major brown coal basins are found in Krusnéhory Mountains region and cover an area of 1,900 square kilometers (km²). Coal also is mined in the Cheb, Sokolov, and Zitava Basins. As of December 31, 2000, total resources of brown coal amounted to more than 9.652 Gt. Brown coal was used primarily as a fuel in the country's electric power industry; a minor proportion was consumed by the chemicals sector. In 2000, major foreign commerce in brown coal centered on exports of about 3 Mt; Germany (67%) and Slovakia (26%) were the major recipients (GEOFOND, 2001, p. 67, 69). According to GEOFOND (2001, p. 71), Czech standards for coal describe high-volatile lignite as a variety of brown coal that has undergone the least amount of coalification and still has xylitic characteristics (fragments of wood, preserved tree trunks, etc.). Its dry calorific value is less than 17 MJ/kg. The boundary between brown coal and high-volatile lignite is not distinct. Lignite is consumed mainly by the electric-power-generating sector; it also is used for heating. The chief deposits occur in the Vienna Basin, which extends from Austria to Moravia. Total resources of lignite in the Czech Republic at the end of 2000 amounted to more than 1.029 Gt (GEOFOND, 2001, p. 71).

Natural Gas and Petroleum.—According to GEOFOND (2001, p. 75), the Czech Republic's oil-and-gas-bearing/producing area is in the so-called Vienna-Moravia oil-bearing province. The deposits in this area are hosted in a large number of "individual oil-bearing structures and producing horizons . . ." to a depth of 2,800 meters (m). Sandstones of Middle and Upper Badenian age are described as hosting the most productive oil deposits. Hrusky was the largest deposit, but most of the oil had been extracted, and the structure serves mainly as an underground gas storage facility. Another oil-bearing area is in the Moravian region of the Carpathian foredeep where exploration was being conducted. Petroleum in this region occurs in weathered crystalline Paleozoic rocks. The prevailing type of petroleum is a light, sulfur-free paraffin to paraffin-naphthene oil. As of December 31, 2000, the Czech Republic's petroleum resources amounted to about 37.5 Mt, of which about 11.1 Mt was categorized as economic proven; 13.5 Mt as economic probable; and about 12.9 Mt as subeconomic.

In 2000, the Czech Republic imported about 5.8 Mt of petroleum, of which about 4.8 Mt was imported from Russia, and about 500,000 t came from Kazakhstan. Total imports of petroleum from the Commonwealth of Independent States (CIS) accounted for more than 90% of the country's import needs. Exports during the same period were about 111,000 t (GEOFOND, 2001, p. 76). Natural gas production declined by about 17% from 143 million cubic meters produced in 1999. In 2000, Russia supplied the Czech Republic with about 78% of more than 9.5 billion cubic meters of natural gas imports; about 21% was obtained from Norway (GEOFOND, 2001, p. 80).

References Cited

- Ambroz, Petr, 1997, The Czech steel industry: Czech Business and Trade, no. 8, p. 35-36.
- Bennett, Magnus, 2001, Resuscitating Vitkovice: MBM (Metal Bulletin Monthly), no. 361, January, p. 66.
- Emerging Europe Monitor, 2002, Central Europe: Business Monitor

International v. 9, no. 9, September, p. 1.

Magnesium Elektron, 2002, Flux magnesium recycling brief—Officially opened: Magnesium Elektron, no. 2, Summer, p. 2.

GEOFOND, 2001, Mineral commodity summaries of the Czech Republic: Ministry of the Environment of the Czech Republic, June, 172 p.

Industrial Minerals, 2001, Treibacher closes CHZS WFA purchase: Industrial Minerals, no. 404, p. 11.

Lansdowne, Alan, 2001, Czech steel weighs consultancy's mega-wager proposal: Metal Bulletin, no. 8576, May 21, p. 31.

Luks, Josef, 1997, Current mining law in the Czech Republic: Czech Business and Trade, no. 11, p. 35-36.

Metal Bulletin, 2001a, Czech copper foundry is set to close: Metal Bulletin, no. 8576, May 21, p. 19.

Metal Bulletin, 2001b, Czech government sets timetable for the sale of Nova Hut: Metal Bulletin, no. 8551, February 19, p. 23.

Metal Bulletin, 2001c, Czech government suspends Nova Hut privatization: Metal Bulletin, no. 8584, June 18, p. 24.

Metal Bulletin, 2001d, Czech lead processor set to raise profits: Metal Bulletin, no. 8585, June 21, p. 11.

Metal Bulletin 2001e, Czechs press European Commission to save restructuring plan: Metal Bulletin, no. 6818, October 22, p. 39.

Metal Bulletin, 2001f, Duferco renews interest in Nova Hut: Metal Bulletin, no. 8567, April 19, p. 19.

Metal Bulletin, 2001g, Hopes rise of restructuring Czech steel: Metal Bulletin, no. 8626, November, p. 16.

Metal Bulletin, 2001h, Kovohute Celakovice expects rise in profits: Metal Bulletin, no. 8586, June 25, p. 10.

Metal Bulletin, 2001i, Magnesium Elektron's Czech plant to start production: Metal Bulletin, no. 8616, p. 9.

Metal Bulletin, 2001j, New board for Vitkovice after strategy row: Metal Bulletin, no. 8589, July 5, p. 17.

Metal Bulletin, 2001k, Nova Hut aims for 70% capacity despite losses: Metal Bulletin, no. 8616, October 15, p. 19.

Metal Bulletin, 2001l, Nova Hut gets wage deal to avert strike: Metal Bulletin, no. 8569, April 26, p. 20.

Metal Bulletin, 2001m, Nova Hut seeks \$46m compensation from Kaiser in contract dispute: Metal Bulletin, no. 8575, May 17, p. 21.

Metal Bulletin, 2001n, Nova Hut takes control of Czech re-roller: Metal Bulletin, no. 8566, April 12, p. 14.

Metal Bulletin, 2001o, Steckel mill row rumbles on at Nova Hut: Metal Bulletin, no. 8626, November 19, p. 16.

Metal Bulletin, 2001p, Three Ostrava steelmakers may join forces: Metal Bulletin, no. 8552, February 22, p. 29.

Metal Bulletin, 2001q, Trinec bids to buy Poldi: Metal Bulletin, no. 8546, February 1, p. 19.

Metal Bulletin, 2001r, Trinec buys into Nova Hut and boosts Czech Merger plan: Metal Bulletin, no. 8581, June 25, p. 18.

Metal Bulletin, 2001s, Trinec takes over cold drawing plant: Metal Bulletin, no. 8561, March 26, p. 21.

Metal Bulletin, 2001t, TZ merges with Moravia: Metal Bulletin, no. 8588, July 2, p. 10.

Metal Bulletin, 2001u, Vitkovice stamps steel into new company: Metal Bulletin, no. 8597, August 6, p. 14.

Metal Bulletin, 2001v, Vitkovice Steel claims interest from abroad: Metal Bulletin, no. 8621, November, p. 17.

Urban, Zdenek, 1998, Metallurgy and metal processing in the Czech Republic: Czech Business and Trade, no. 1, p. 15-16.

Walawalker, Raoul, 2000, MBM, Czech steel maps out its future: Metal Bulletin, no. 354, June, p. 47-51.

HUNGARY

Bauxite was the only major nonfuel mineral produced in Hungary that was significant in terms of European mineral production. In 2001, Hungary maintained production of modest amounts of fossil fuels, industrial minerals, and metals. Despite substantial production of bauxite and alumina, Hungary's production of primary aluminum remained modest owing to limited domestic sources of energy. The production of coal, natural gas, and petroleum was sufficient to satisfy only about one-half of the country's annual energy needs.

In 2001, Hungary's GDP increased by 3.7% compared with that of 2000. The gross output (value) of industry rose by about 5.0%, and that of mining and quarrying, by about 6%. The volume of output by the mining and quarrying sector increased by about 16.3% compared with that of 2000. Total investment in the mining and quarrying sector, however, declined by about 42% compared with the level of investments in 2000 (Hungarian Central Statistical Office, 2002, p. 282, 300, 396).

Government Policies and Programs

The Government based its regulatory policies for mining and geologic survey work on provisions in the Mining Law of 1993 (Act XLVIII). Section 50 of the Mining Law was the basis for Governmental Decree No. 132/1993, which constitutes the legislative basis for the Hungarian Geological Survey. The Mining Law and related decrees and codes established the legislative bases for estimating reserves, determining environmental risks associated with mining, and providing the geological and technical information needed to outline tender conditions.

Government agencies that were responsible for enforcing existing environmental protection laws and regulations included the Ministry of the Environment and Regional Planning (KTM) and the Hungarian Mining Office (MBH). The KTM was authorized to help only in the enforcement of existing environmental legislation prescribed by other ministries of the Government. With respect to mining and minerals, Hungary's Ministry of Industry and Commerce had the primary responsibility for establishing environmental regulatory standards. The chief responsibility of the MBH was that of a certifying agency, which could review only technical developmental and operational plans. These plans were required to include provisions that pertain to environmental protection and land restoration by responsible entities.

Production and Trade

The output of bauxite declined by about 4% compared with that of 2000. The production of crude steel increased by 4%. Among industrial minerals, the production of cement also showed gains of more than 4%. Although total coal output fell by about 2%, a much sharper reduction of bituminous coal production (about 23%) was reported. Brown coal production also fell during this period by about 10% (table 3).

Hungary's output fossil fuels and industrial minerals was modest. To meet the needs of its economy, the country relied heavily on imported mineral raw materials. In 2001, the imports of crude raw materials, by volume, which included minerals, declined by about 1% compared with those of 2000; those of mineral fuels and electric power also reported slight declines. Crude raw material exports fell by about 13%; exports of mineral fuels and electric power rose by about 18% compared with those of 2000. The value of imports of metal ore and scrap fell short of the 2000 import level by about 9%; exports of ore and scrap also declined by only about 1.5%. Imports and exports of iron and steel showed increases of about 4% and 1%, respectively. Only slight increases, however, were reported for imports and exports of nonferrous metals

(Hungarian Central Statistical Office, 2002, p. 316).

Imports and exports of industrial mineral products rose by about 9.4% and 3.5%, respectively. With respect to mineral fuels, the total value of imports was about 4.7 times greater than that of exports; imports of natural and manufactured gas and coal and coal products and rose by 24.4% and 2%, respectively, while their exports fell by about 42% and 33%, respectively (Hungarian Central Statistical Office, 2002, p. 310-311, 316-317).

Commodity Review

Metals

Bauxite mining and refining to alumina and manganese mining remained the only metal mining and processing operations in Hungary. Bakonyi Bauxitbánya Kft. mined the bauxite in the Bakonyi District; Hungary's total resources of bauxite were estimated to be about 26 Mt, of which commercial reserves amounted to 16 Mt, at an average grade of 50.4% Al_2O_3 and 7% SiO_2 . National Ore and Mineral Mines Ltd. continued to mine both manganese carbonate and oxide ores at Urkut.

Although Hungary no longer mined copper, past surveys of the deep-lying (900-1,100 m) Recsk copper ore body in the Matra Mountains discovered between 172 and 175 Mt of copper ore at a grade of 1.12% copper and about 20 Mt of polymetallic ore at a grade of 4.22% lead and 0.92% zinc, as well as smaller quantities of gold, molybdenum, and silver. Geologic investigations conducted by the Government determined the area of mineralization to be about 10 km^2 . After years of failed efforts to attract foreign investment, the exploration shaft and adit at the Recsk copper deposit, which was under care and maintenance, finally was closed, the equipment removed, and the facilities flooded in 1999 (Molnar, 2001). Gold exploration, however, was conducted in recent years in this region. In 2001, European Minerals Corporation (formerly Kazakhstan Minerals Corp.) explored for epithermal deposits of gold and silver (European Minerals Corporation, 2001).

Iron and Steel.—Given that the growth of the gross domestic product in 2002 and 2003 was anticipated to be only slightly less than that achieved in 2001, according to the Hungarian Steel Industry Association, the country's consumption of steel was expected to range between 2.5 and 2.7 Mt/yr (Lansdowne, 2001). In 2001, the output of crude steel in Hungary grew by 4.4% compared with that of 2000. As in the other Central European countries, acquisitions and mergers in the steel sector were increasing, which reflected the Government's program to accommodate EU standards and practices in preparation for Hungary's entry into the EU. All concentrates and ores needed for the country's three steel producers were imported.

In mid-2001, Italy's Cogne Acciai Speciali Srl, which was a producer of alloy, stainless, and tool steels, acquired Dam-Diósgyőr Acélművek Rt (DAM), which produced alloy, bearing, carbon, free-cutting, stainless, and tool steels. The new owners purchased DAM, which had been in receivership for more than a year, for about \$14.7 million and renamed it Dam Steel Speciális Acélgégyártó Rt. Management plans included bringing DAM's product mix closer to that of its parent company and increasing

foreign foreign sales (Metal Bulletin, 2001c).

Chief issues of concern for OAM-Ozdi Acélmuvek Kft, which was a major Hungarian producer of carbon steel, rebar, and welded wire mesh (owned by Max Aicher GmbH of Germany), involved increasing imports of rebar from Poland and other Central European countries at a time when domestic demand showed marked growth. This concern prompted the Government to levy a 4.5% duty for about a 12-month period. Hungary's imports of rebar through the end of August amounted to about 47,000 t, or about one-half of Ozd's sales. The country's construction sector showed rapid expansion during the year, which formed a large part of the increase in steel demand (Metal Bulletin, 2001d).

Although plans were developed to privatize Dunafer Duna Vasmű Részvénytársaság (Dunafer), which was Hungary's largest integrated steel producer, few parties were interested owing to the company's low profitability and a capital requirement that amounted to about \$750 million (Metal Bulletin, 2001e). Operating losses through the third quarter of 2001 were reported to have totaled to about \$9.5 million (Metal Bulletin, 2001b).

In 2001, capital improvement at Dunafer showed mixed results. A program to modernize a 480,000-t/yr cold-rolling mill was scheduled to begin in December at DVVA Dunafer-Voest-Alpine Hideghengermű Kft (DVVA), which was a joint venture created by Dunafer (60%) and Voest-Alpine Stahl AG of Austria (40%). The modernization program (about \$7 million), which will take about 2 years to complete, will focus on upgrading its skin pass mill to raise the quality of the cold-rolled strip (Metal Bulletin, 2001f). Dunafer's request for funds to rebuild its coke ovens, however, was not approved by the state privatization organization and Dunafer's managing agency APV Rt, which restricted outlays for capital investments to capital generated from profits (Metal Bulletin, 2001a).

Industrial Minerals

Hungary produced a broad range of industrial minerals that included aggregates, bentonite, kaolin, and perlite. Such industrial minerals as construction aggregates and cement continued to play an important role in Hungary's economy, especially in view of their role in the modernization process necessary for the country's infrastructure. Highway construction planned through 2008 would continue to be an important element.

Mineral Fuels

Domestically produced coal, natural gas, and petroleum have accounted for 40% of Hungary's energy needs. Hungary produced more than 1 Mt/yr of crude petroleum from reserves that amounted to about 22 Mt; most petroleum (9 Mt), however, was imported from Russia via the Friendship Pipeline. Similarly, a substantial and increasing amount of natural gas was being imported from Russia through Russia's gas-main network (Molnar, 2002).

Hungary classifies its coals into three categories—hard coal (bituminous), brown coal, and lignite; the latter two are subbituminous and are mined, for the most part, to fuel the

country's thermal electric power stations. Lignite was mined by open pit at the Bukkabrany and the Visonta Mines; the output from these mines was used entirely at the Matra electric powerplant. The mines and the electric powerplant have been owned by RWE/EVS, which was a German consortium (Molnar, 1999, 2001). Resources of subbituminous and bituminous coals in 2001 amounted to about 2,900 Mt and 198 Mt, respectively (Molnar, 2002).

References Cited

- European Minerals Corporation, 2001, European Mineral Corporation change of name and trading symbol: London, United Kingdom, European Minerals Corporation press release, August 14, 2 p.
- Hungarian Central Statistical Office, 2002, Statistical yearbook of Hungary 2001: Hungarian Central Statistical Office, 647 p.
- Lansdowne, Alan, 2001, Hungarian steel demand will continue growing: Metal Bulletin, no. 8587, June 28, p. 19.
- Metal Bulletin, 2001a, Dunafer managers unhappy at dismissal of coke plan: Metal Bulletin, no. 8626, November 19, p. 16.
- Metal Bulletin, 2001b, Dunafer's losses are twice as bad as budgeted: Metal Bulletin, no. 8672, November 22, p. 16.
- Metal Bulletin, 2001c, Hungarian mills express concern over rising imports: Metal Bulletin, no. 85467, April 19, p. 21.
- Metal Bulletin, 2001d, Hungary wards off rebar imports: Metal Bulletin, no. 8623, p. 22.
- Metal Bulletin, 2001e, New move to privatise Dunafer: Metal Bulletin, no. 8546, February 1, p. 18.
- Metal Bulletin, 2001f, Voest-Alpine invests in Hungarian cold roller: Metal Bulletin, no. 8591, July 12, p. 18.
- Molnar, Jozsef, 1999, Hungary, in Mining annual review: London, United Kingdom, Mining Journal Ltd., p. 47.
- Molnar, Jozsef, 2001, Hungary, in Mining annual review: London, United Kingdom, Mining Journal Ltd. CD-ROM.
- Molnar, Jozsef, 2002, Hungary, in Mining annual review: London, United Kingdom, Mining Journal Ltd. CD-ROM.

POLAND

Poland was endowed with significant mineral resources, which included bituminous coal; copper and lead and zinc ores; salt; silver; and sulfur. The country's reserve bases of sulfur and copper and sulfur represented about 9% and 6%, respectively, of world totals for these mineral commodities (Edelstein, 2002; Ober, 2002). Resources of coal, salt, and silver also were considered to be of world significance. An inventory of the country's mineral resources for 2001 indicated net gains in geologically documented resources mainly for bituminous coal, kaolin, and construction-grade ceramic clays and construction-grade quartz sand (table 6).

After Russia, Poland was the largest producer of copper in Europe and Central Eurasia in 2001 and remained among the top 10 world producers of copper in terms of mine output (Edelstein, 2002). Poland also continued to be among the world's major producers of nitrogen (in ammonia), salt, silver, and sulfur. In Europe and Central Eurasia, the country was a significant producer of lead and zinc and a leading producer of lime. In 2000 (the most recent available data), Poland accounted for about 2.8% of total world output of bituminous coal (Główny Urząd Statystyczny [Central Statistical Office], 2002a, p. 534-535).

Reflecting global economic doldrums, the slowdown of Poland's economy registered a yearend 1.0% real growth of the gross domestic product compared with that of 2000 (4.0%).

Industrial production showed a slight decline (0.2%) compared with the 7.1% increase in 2000 (Emerging Europe Monitor, 2002, p. 4-5). The gross output of industry represented about 22% of the GDP compared with 24% in 2000. The mining and quarrying sector, which included mineral fuels and processing, accounted for about 5.3% of industrial output. The production of coke and refined petroleum, industrial mineral products, and base metals accounted for about 4.7%, 4.5% and 3.7%, respectively, of total industrial production.

Total sales for the year by the mining and quarrying sector contracted by less than 1.0% compared with those of 2000; sales by the coal, lignite, and peat mining industries, however, increased by about 6% during the same period. The base-metals-producing sector registered about a 17% decrease in sales compared with those of 2000, and sales by the industrial minerals sector decreased by about 3% compared with those of 2000. The coke manufacturing and petroleum refining sectors reported about a 17% decline in sales compared with those of 2000. On balance, total sales in all branches of the minerals industry as a proportion of total sales of industry declined to 18% from 20.9% in 2000 (Główny Urząd Statystyczny [Central Statistical Office], 2002c, p. 66-68).

Government Policies and Programs

The Government of Poland remained committed to privatizing fully the country's iron and steel industry. By 2001, 565 of the 695 mining enterprises had a limited liability status, 77 were joint ventures, 9 were of the partnership type, and 35 remained state-owned (Ministry of Environmental Protection, Natural Resources and Forestry, 2001, p. x). According to Poland's Ministry of the Treasury, which oversees the denationalization of industry, the privatization of the steel industry should create important foreign investment opportunities that would make the industry more competitive (Metal Bulletin, 2000f). Steel trade issues and efforts to restructure and privatize Poland's steel industry continued to be among the leading mineral industry concerns during the year.

Production and Trade

As in 2000, Poland's production of minerals showed mixed results. Cement and crude steel, which were bellwether commodities for the construction and manufacturing sectors of the economy, largely reflected the performance of Poland's economy during the year with declines of about 20% and 16%, respectively, compared with output levels of 2000. Production increases, however, were noted for mined copper (4.5%) and electrolytically refined copper (2.6%), refined lead (4.6%), silver (4%), and zinc (1.9%); cadmium production rose sharply from a very low base in 2000. Copper and especially silver remained important components in the country's mineral export trade. Most industrial minerals registered production shortfalls; the production of mineral fuels, however, generally kept pace or exceeded production levels of 2000 (table 5).

Poland's trade returns for 2001 for selected mineral commodities largely registered import increases compared with those of 2000. Import declines were reported for iron ore and concentrate and crude petroleum (table 7). Mineral export

results in 2001 were more varied. Export increases were noted for aluminum, cadmium (about 200 t in 2001 from 0 t in 2000), steel semimanufactures, refined silver, and refined zinc. Substantial export declines were reported, however, for copper and copper products and pig iron. Among industrial minerals and mineral fuels, exports of coal, cement, salt, and sulfur fell compared with those of 2000; those of glass, coke and semicoke, and refined petroleum showed increases (table 8).

Commodity Review

Metals

Cadmium.—In 2001, Poland's production of cadmium reached about 330 t, which was its highest level in more than 5 years. Owing to its strong association with sphalerite, cadmium in Poland was produced as a byproduct of the lead and zinc mining and processing operations in the Silesia-Cracow region. A new zinc rectifier, which was built in 1999 at the Misateczko Slaskie smelter and an installation for refining zinc-cadmium wastes went into full production during the year. About 6 t of cadmium was produced in 2000 (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 65-77).

Copper.—All copper ore in Poland was mined by Kombinat Gorniczo Hutniczy Miedzi (KGHM) Polska Miedz S.A. (KGHM), which was a major world copper mining, beneficiation, smelting, and refining complex in the Lubin area; this accounted for more than 3% of world copper production. The ore was worked (room and pillar) at the Lubin, Polkowice-Sieroszowice, and Rudna Mines at depths that ranged from 600 to 1,200 m (about 1,900 to 3,700 feet). Chalcocite is the principal mineral in the ore; smaller amounts of bornite and chalcopyrite also are present. The mineralization is mainly in the shale horizon, but it also extends into the overlying carbonate and underlying sandstone layers. As of December 31, 2001, ore resources under exploitation amounted to more than 1.5 Gt that contained about 35 Mt of copper (table 6). Ore grades have ranged from 1.37% (Lubin Mine) to 2.58% (Polkowice-Sieroszowice Mine). Two varieties of concentrate are produced at Rudna (28% copper) and Polkowice (25% Cu). Total reserves amounted to about 2.4 Gt that contains about 48 Mt of metal (table 2; Mining Journal, 1999).

The Rudna Mine has the largest production capacity, which amounts to about 13 Mt/yr of ore. The concentrator at Rudna processes Rudna ores, as do some ores from the Polkowice-Sieroszowice Mine; its capacity was rated to produce about 700,000 metric tons per year (t/yr) of concentrate. Output by the Polkowice-Sieroszowice Mine and concentrator amounts to about 9.2 Mt/yr of ore and 450,000 t/yr of concentrate. The Lubin Mine accounts for about 7 Mt/yr of ore to produce about 465,000 t/yr of concentrate (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 128-129).

In 2001, Poland's production of copper (in ore) increased by about 4% compared with that of 2000. Similarly, copper recovered in concentrate increased by about 5%, and primary smelter copper production, by about 2%. The output of secondary smelter copper registered a substantial increase of about 42% to about 28,000 t from about 18,000 t in 2000. The

total output of electrolytically refined copper (primary and secondary) increased by about 2.6% compared with that of 2000. Trade data for 2001 show that Poland's net exports of unwrought refined copper and copper alloys amounted to 233,400 t and were valued at about \$372 million (Główny Urząd Statystyczny [Central Statistical Office], 2002b, p. 147, 537). In order of volume, France, Germany, China, and Austria were the principal importers of copper from Poland in 2001. China's imports of copper from Poland amounted to about 35,000 t, which was an increase of about 46% compared with imports in 2000 and about 75% compared with those of 1998. In 2001, Poland's apparent consumption of refined copper amounted to about 272,000 t, which was an increase of about 11% compared with that of 2000 (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 132-133).

Major developments in 2001 involved a KGHM proposal that would merge the Lubin, Polkowice-Sieroszowice, and Rudna Mines into a single mining division and its two smelter/refineries into a separate operational division. The proposal's aim was to optimize operations from the company's top management down to the mining, smelting, and refining level (Metal Bulletin, 2001f).

Gold.—In 2001, Poland's gold production continued to be based almost entirely on the country's copper mining operations. The gold content of the copper concentrates produced by KGHM were reported to be about 1 gram per metric ton (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 197-199). Byproduct gold produced at KGHM's copper refineries declined by about 4% in 2001 compared with that of 2000. The gold was recovered at KGHM's 550-kilogram-per-year precious metals plant (Boliden, Klado method), which was a division within the Glogow smelter and refinery. The amount of gold recovered at Glogow varied with changes in the proportion ores produced at the three mines, each of which had a different average gold content. Poland's domestic consumption of gold in recent years has been in the range of about 260 to 365 t/yr.

Iron and Steel.—In 2001, such bellwether commodities as pig iron and crude steel showed considerable contraction of output as each commodity declined by 16% compared with its respective production level in 2000. The production of hot-rolled steel declined by 12%. Poland depended entirely on imported iron ores and concentrates, as well as on chromite, manganese, and titanium, to produce the ferroalloys that were needed by the steel industry.

In 2001, investor interest in Poland's steel industry by foreign, mainly West European, investors was heightened. ThyssenKrupp Materials AG of Germany negotiated the acquisition of 80% of shares of stock of Poland's metallurgical products distributor (ferrous and nonferrous metals) Energostal S.A. The deal was finalized in June; the company was given a new name—ThyssenKrupp Energostal S.A. ThyssenKrupp Energostal incorporated an important portion of Poland's metal products distribution, services, and storage sector with that of the EU (Metal Bulletin, 2001j).

In the early part of the year, such Western European Steel producers as Rautaruuki Oy of Finland and VA Stahl (Voest-

Alpine AG) of Austria expressed interest in the developing privatization program for Poland's steel industry. The privatization program encompassed the following enterprises: Huta Cedler S.A. (rolling mill/wire rod, bars, angles, etc; cold-rolled hoop and strip), Huta Florian S.A. (rolling mill, mainly cold-rolled section), Huta Katowice S.A. (integrated steelworks/pig iron and crude and carbon steels), and Huta im Tadeusza Sendzimira S.A. (integrated steelworks/pig iron carbon and nonstainless alloy steels) (Metal Bulletin, 2001c). In March, however, VA Stahl withdrew as an interested party from the program, reportedly owing to internal consolidation at Voest-Alpine and to proposed mergers under consideration in other parts of Europe (Metal Bulletin, 2001k).

By midyear, the early bids by Rautaruuki and several other steel interests fell short of the Government's sale provisions. The remaining interested investors were Ispat International of the United Kingdom and a consortium that comprised the Arbed Group of Belgium-Luxembourg, ThyssenKrupp AG of Germany, and the Usinor Group of France. Poland's privatization program was partly designed to harmonize the country's steel industry with the EU's regulations that govern state subsidies, production restructuring, and capacity limits (Protocol 2 of the Europe Agreement, based on European Coal and Steel Community guidelines). The four Polish steel plants offered for privatization were to rationalize their operations and to reduce their output capacities in accordance with these regulations to maintain the country's candidate status for accession in 2004 (Metal Bulletin, 2001a, b). Huta Katowice S.A. was in financial difficulty with reported debts that amounted to about \$95 million and losses of about \$24 million in the third quarter. Blockage of Huta Katowice's main accounts by lending banks complicated the plant's operations at midyear (Metal Bulletin, 2001e). Activities at Huta im. T. Sendzimira S.A., mainly were focused at implementing the company's second modernization phase that followed a final credit agreement with Government guarantees of 50% of a loan worth about \$203 million. Equipment for the modernization was to be supplied by Voest-Alpine AG and would include two walking beam furnaces, two downcoilers, and a reversing rougher (Metal Bulletin, 2001i).

The rationalization program at Huta Czerwona S.A. involved the closure of the company's blast furnace and its two remaining open hearth furnaces. Steel would be produced in a Danieli electric arc furnace that was installed in 1997. Huta Czerwona, however, was not yet ready to be offered for privatization (Metal Bulletin, 2001d). To assure the continued success of its efforts to privatize the steel industry, the Government of Poland promulgated "Update 2001—Iron and Steel Restructuring Program," which adjusted the Government's privatization plan for the steel industry to allow "Polish steel products to become viable while respecting open market rules." The full legal basis for the restructuring program was the Iron and Steel Restructuring Act, which was passed by Poland's Parliament in August (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 239-249).

Stalexport Zaptor S.A., which was a major Polish metal-trading-and-processing company, and owner of steel producers Huta Szczecin S.A., Huta "Ostrowiec" S.A., and P.P. Huta "Labedy," initiated a selloff of these assets in 2001. Financial

losses, which began soon after the acquisition of these assets in the late 1990s rose to a debt of about \$160 million. In midyear, Stalexport sold the cast iron-producing section of Huta "Ostrowiec," SOR, to Centrozap SA (a metals processor and trader) with primary interests in iron and steel. Later in the year, Stalexport planned to sell of its pig iron producer Huta Szczecin to Centrozap and to find buyers for Huta "Ostrowiec" and Huta "Labedy" (Metal Bulletin, 2001g).

Other important issues included a ruling by the appellate unit of the WTO that upheld the decision by that organization in 2000, which specified that Thailand's antidumping actions against Poland's steel exports was in violation of WTO rules (Metal Bulletin, 2001l). This issue arose in 1997 with respect to steel exports from Huta Katowice SA to Thailand. Thai trade officials alleged the dumping of steel by Huta Katowice. The company appealed the charges, pointing out that the steel, which Thai officials claimed cost \$500 per metric ton to produce and that which they claimed was sold on the Thai market for \$265 per ton, actually represented two different steel products (Reuters Limited, 1997).

Lead and Zinc.—Poland was a major European producer of lead and zinc ore. Although mine production of lead and zinc increased slightly in 2001, compared with that of 2000, the production of total refined lead increased by about 18% and that of zinc, by about 1% (table 5).

Lead and zinc ore is mined in the southeastern part of the country in the Silesia-Cracow region at two underground mines. The Olkuz-Pomorzany Mine, which is located near Olkusz and was part of the ZGH Boleslaw operation, produced ore that graded about 1.69% lead and 4.2% zinc, and the Trzebieńka Mine and concentrator at Trzebieńka produced ore that graded 1.67% lead and 3.4% zinc. The volume of mine production of lead (lead in ore) increased by about 7% compared with that of 2000; that of concentrates (lead content), by about 13%. The volume of mine output of zinc, however, declined by about 5%; that of concentrates, by about 3%. The decline in zinc mine production was attributed mainly to depletion of the ore (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 258-299, 495).

Poland's total smelter lead capacity was rated at about 85,000 t/yr. In 2001, the total output of smelter lead amounted to slightly more than 70,000 t, of which primary smelter lead production constituted about 44% of total production; the balance was accounted for by secondary sources of lead. Secondary lead production was centered largely at smelters operated by Baterpol Ltd., Huta Cynku Miasteczko Śląskie, and KGHM. In 2001, Baterpol Ltd acquired the lead smelting and refining operations of Huta Metali Niezależnych "Szopienice" (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 258-299, 495).

Poland produced smelter refined zinc (about 46%) and a larger amount of electrolytically refined zinc (about 54%). Owing to declining mine production of zinc, imports of sphalerite and sphalerite-galena concentrates have been increasing. In 2001, total imports of zinc and zinc-lead concentrates, in terms of gross weight, amounted to about 118,000 t; this was an increase of about 24% compared with that of 2000. The main suppliers of zinc concentrates to Poland, were in descending order, Romania,

Canada, and Honduras (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 258-299, 495). In 2001, the net value of exports of unwrought lead amounted to about \$1.8 million. In order of volume, Germany, the United Kingdom, and the Czech Republic were the chief importers of lead from Poland. With respect to the value of lead imports of lead, Sweden, Kazakhstan, and Germany (in descending order) were the main suppliers of unwrought lead to Poland. The net export value of unwrought zinc amounted to about \$71.6 million; the major importers of unwrought zinc were, in descending order, Germany, the Czech Republic, and Slovakia (Główny Urząd Statystyczny [Central Statistical Office], 2002b, p. 147, 548).

Silver.—In 2001, Poland, which was among the major world producers of silver, accounted for about 7% of world mine production (Hilliard, 2002, p. 151). Copper and, to a lesser extent, lead and zinc mining were Poland's domestic sources of primary silver. The country's copper mining, smelting and refining complex in the Lubin area, which was operated by KGHM, produced about 98% of the country's byproduct silver, which amounted to 1,163 t in 2001. Poland's exports of silver in 2001 amounted to 1,094 t and had a net value of about \$155 million. The top three importers of Polish silver were, in descending order, the United Kingdom, Germany, and Belgium (Główny Urząd Statystyczny [Central Statistical Office], 2002b, p. 147, 513).

Industrial Minerals

Poland produced a broad range of industrial minerals that included calcareous and silicate rocks and aggregates, clays, feldspar, gypsum, magnesite, salt, and sulfur, which served the needs of the country's chemical and construction industries. Poland remained among the leading world producers of lime, nitrogen (in ammonia), salt, and sulfur (Kostick, 2002; Kramer, 2002; Miller, 2002; Ober, 2002).

Sulfur.—Poland's sulfur production capacity was effectively reduced by about 1 Mt/yr with the closure of the Gasworks Mine in late 2001. The Gasworks Mine, which had worked the Gasworks-Grab-Wydzra sulfur deposit since 1967, was owned and operated by state-owned Kopalnie i Zakłady Przetworcze Siarki "Siarkopol." Poland's remaining native sulfur mine was the Osiek Mine, which, like the Gasworks Mine, used a Frasch extraction technique, had a design capacity of 800,000 t/yr of sulfur. Osiek Mine's management was developing plans to increase production capacity to 1.3 Mt/yr in a Phase II expansion program (Fertilizer Week, 2001).

In 2001, Poland's production of native sulfur declined by about 31%, and that of total sulfur (native plus byproduct), by about 37% compared with that of 2000. The volume of sulfur exports in 2001 declined by 24% compared with that of 2000 (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 450-455).

Mineral Fuels

Coal.—Poland, which remained a significant world producer of coal, accounted for about 3.1% of the world's output of

bituminous coal and about 6.9% of the world's total output of lignite (Główny Urząd Statystyczny [Central Statistical Office], 2002a, p. 492). In 2001, the country's production of bituminous coal and lignite amounted to about 104 Mt and 60 Mt, respectively; these were virtually the same levels of production as those of 2000. The country's net exports of coal amounted to about 21.1 Mt, which was a decline of about 2.8% compared with net exports of 2000. In order of volume, Germany, Austria, and Finland were the major importers of Polish coal (Główny Urząd Statystyczny [Central Statistical Office], 2002b, p. 188).

Poland's bituminous coal was mined in three basins of Late Carboniferous age. The Upper Silesian, Lower Silesian, and Lublin Basins have exploitable resources that amounted to 45,900 Mt of coal in 132 deposits. The Upper Silesian Basin represented the major portion of the country's total reserves with about 80% of the total in 114 deposits (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 217-218).

In 2001, the World Bank for Reconstruction and Development agreed to provide the Government of Poland a \$100 million loan to help finance Poland's Hard Coal Reform Program; this was the second phase of a reform plan that called for streamlining the industry with closures of unprofitable mines and workforce reductions and retraining (Metal Bulletin, 2001h; World Bank for Reconstruction and Development, 2001, p. 14).

Natural Gas and Petroleum.—The production of natural gas increased by about 4%, and that of petroleum, by about 17% compared with respective output levels in 2000. Poland depended on imports to meet its needs for oil and gas. In 2001, Poland's imports of petroleum declined to 17,513,000 t, or by about 3% compared with those in 2000. Poland's imports of natural gas, however, increased by about 8%. Russia remained Poland's chief source of supply of both hydrocarbons, which supplied about 85% and 95%, respectively, of Poland's imports of natural gas and petroleum in 2001 (Ministry of Environmental Protection, Natural Resources and Forestry, 2002, p. 177, 325).

Exploration activity for hydrocarbons during the year included the Government's initiation of a third round of bidding for 17 exploration blocks in the central and northwestern parts of Poland. In 2000, the Government awarded 15 exploration blocks in the southeastern part of the country; EuroGas Inc. of the EU obtained 10 of the 15 exploration blocks (Oil & Gas Journal, 2001a, p. 37). In February, gas production began at the Kleka 11 well. The initial rate of production was 2 million cubic feet per day but was expected to reach 4 million cubic feet per day by 2003. Polish Oil & Gas Co. owned 52% of Kleka 11; the balance was owned by Fx Energy Inc. of the United States (Oil & Gas Journal, 2001b, p. 44). Other issues relative to the natural gas and petroleum sector included the continuing formal discussion concerning the diversification of Poland's supply of natural gas. The EU's accession requirements for applicant countries stipulate that natural gas imports must come from at least two different sources. To meet this requirement, Poland's oil and gas authorities held talks were held with Danish and Norwegian commercial interests (Alexander's Oil & Gas Connections, 2001a). In early 2001, Poland approved a

route for a new gas pipeline that would carry Russian gas to Western Europe. The new gas pipeline was to be in addition to the Yamal gas main that carried Russian gas through Poland (Alexander's Oil & Gas Connections, 2001b).

References Cited

- Alexander's Oil & Gas Connections, 2001a, News and trends Europe—Diversification of Poland's gas supplies still in debate: Alexander's Oil & Gas Connections, v. 6, no. 15, August 14., p. 1.
- Alexander's Oil & Gas Connections, 2001b, News and trends Europe—Poland approves Russian pipeline route: Alexander's Oil & Gas Connections, v. 6, no. 11, June 18. p. 1.
- Edelstein, D.L., 2002, Copper: U.S. Geological Survey Mineral Commodity Summaries 2002, p. 54-55.
- Emerging Europe Monitor, 2002, Poland, *in* Central Europe: Business Monitor International, v. 9, no. 9, September, p. 4, 5.
- Fertilizer Week, 2001, Poland's Siarkopol closes Gasworks S mine: Fertilizer Week, v. 15, no. 23, October 15, p. 2.
- Główny Urząd Statystyczny [Central Statistical Office], 2002a, Maly rocznik statystyczny [Concise statistical yearbook of Poland]: Główny Urząd Statystyczny, June, 669 p.
- Główny Urząd Statystyczny [Central Statistical Office], 2002b, Rocznik statystyczny handlu zagranicznego [Statistical yearbook of foreign trade]: Główny Urząd Statystyczny, August, 662 p.
- Główny Urząd Statystyczny [Central Statistical Office], 2002c, Rocznik statystyczny przemysłu [Statistical yearbook of industry]: Główny Urząd Statystyczny, December, 441 p.
- Hilliard, H.E., 2002, Silver: U.S. Geological Survey Mineral Commodity Summaries 2002, p. 150-151.
- Kostick, D.S., 2002, Salt: U.S. Geological Survey Mineral Commodity Summaries 2002, p. 138-139.
- Kramer, D.A., 2002, Nitrogen (fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2002, p. 116-117.
- Metal Bulletin, 2000, Pole axed: Metal Bulletin, no., 8502, August 21, p. 14.
- Metal Bulletin, 2001a, Arbed leads Euro-rivals in Polish steel bid: Metal Bulletin, no. 8615, October 11, p. 3.
- Metal Bulletin, 2001b, Deadline draws near for Polish bids: Metal Bulletin, no. 8591, July 12, p. 18.
- Metal Bulletin, 2001c, Foreign mills eye Polish steelworks: Metal Bulletin, no. 8549, February 12, p. 17.
- Metal Bulletin, 2001d, Huta Czerwona, to close blast furnace amid crunch: Metal Bulletin, no. 8572, May 7, p. 3.
- Metal Bulletin, 2001e, Huta Katowice accounts frozen amid Polish crisis: Metal Bulletin, no. 8611, September 27, p. 15.
- Metal Bulletin, 2001f, KGHM mulls merging smelters and mines: Metal Bulletin, no. 8614, October 8, p. 4.
- Metal Bulletin, 2001g, Poland's Stalexport to sell pig iron producer: Metal Bulletin, no. 8629, November 29, p. 13.
- Metal Bulletin, 2001h, Polish coal reform gets help: Metal Bulletin, no. 8646, August 10, p. 99.
- Metal Bulletin, 2001i, Sedzimir to pursue further modernization after Polish government backs loan: Metal Bulletin, no. 8579, May 31, p. 19.
- Metal Bulletin, 2001j, Thyssen buys in Poland: Metal Bulletin, no. 8564, April 5, p. 12.
- Metal Bulletin, 2001k, VA Stahl pulls out of Polish privatization: Metal Bulletin, no. 8558, March 15, p. 17.
- Metal Bulletin, 2001l, WTO rules against Thailand in Polish beams dispute: Metal Bulletin, no. 8560, March 22, p. 19.
- Miller, M.M., 2002, Lime: U.S. Geological Survey Mineral Commodity Summaries 2002, p. 96-97.
- Mining Journal, 1999, Polish base metals: Mining Journal, v. 332, no. 8526, April 9, p. 263.
- Ministry of Environmental Protection, Natural Resources and Forestry, 2002, Bilans gospodarki surowcami w Polsce na tle gospodarki światowej 1996-2001 [Minerals yearbook of Poland]: Krakow, Poland, Ministry of Environmental Protection, Natural Resources and Forestry, 505 p.
- Ober, J.A., 2002, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2002, p. 162-163.
- Oil & Gas Journal, 2001a, Eastern Europe action: Oil & Gas Journal, v. 99, no. 16, April 16, p. 37.
- Oil & Gas Journal, 2001b, Poland: Oil & Gas Journal, v. 99, no. 14, April 2, p. 44.

Reuters Limited, 1997, Polish Huta Katowice denies Thai dumping charges:

Reuters Limited press release, June 18, 1 p.

World Bank for Reconstruction and Development, 2001, Loan to Poland—Second Hard Coal Structural Reform Adjustment Project: Washington, DC, World Bank for Reconstruction and Development SD200100050, August 22, p. 14.

SLOVAKIA

Slovakia continued to be a modest regional producer of a variety of minerals. Aluminum and steel production formed the dominant elements in the country's metals sector. Steel production largely was based on imported raw materials, and that of aluminum was based entirely on imported bauxite and alumina. Small quantities of copper, gold, lead, and zinc also were produced. Industrial minerals production included barite, clays, magnesite, and salt. Slovakia's production of mineral fuels composed brown coal and lignite and minor quantities of gas and petroleum (table 10).

The economy of Slovakia continued to develop towards a full market system. The need to denationalize the state's commercial assets and to reduce subsidies to the public sector expeditiously often was tempered by policies promulgated to maintain social stability that often resulted in increased public sector employment and uneven economic performance. In 2001, Slovakia's GDP increased by 3.3% (constant prices) compared with that of 2000. Industrial production in 2001 continued to show recovery with a growth rate of 6.8% compared with that of 2000 (Emerging Europe Monitor, 2002).

Slovalco was Slovakia's sole producer of primary aluminum. The enterprise, which was originally known as ZSNP Aluminum Works, was put into full operation in 1953. Following the restructuring of ZSNP's assets in 1993, Slovalco became a subsidiary of ZSNP and was solely involved in primary aluminum production. After 1993, Slovalco began a program of modernization and facility expansion that garnered investment capital from the European Bank for Reconstruction and Development (EBRD) and Hydro Aluminium AS of Norway. Hydro and EBRD acquired 14.5% and 10% of Slovalco's shares, respectively; the balance remained with ZSNP (Slovalco, 2000, p. 5-8). In 2001, following an agreement among the Slovalco's shareholders, Hydro and EBRD acquired the majority of Slovalco's shares; each received 40% of total shares of stock. ZSNP was to retain ownership of 20% of Slovalco's shares of stock. A provision in the transaction gave Hydro the option of acquiring EBRD's shares if exercised by yearend 2006. This transaction also allowed ZSNP to restructure its bank debts. Planned facility expansion at Slovalco included the addition of 54 new reduction cells to that would raise capacity by 37,000 t/yr to 146,000 t/yr by 2003. Other modernization programs were expected to raise production capacity at Slovalco to 155,000 t/yr by 2004. Casthouse products that used primary and secondary aluminum also were expected to reach a 178,000-t/yr production level in 2004 (Metal Bulletin, 2001a).

The major portion of Slovalco's production was designated for exports. In 2000 (the latest year for which data were available) sales of finished aluminum during 2000 to have amounted to 141,562 t (5% compared with those of 1999), of which 85.6% was exported. Exports to the EU accounted for 61.7% of total exports of aluminum. The marketed product mix

was billets, 69.8%; primary foundry alloys, 25.85%; wire rod, 3.66%; and liquid metal 0.69% (Slovalco, 2000, p. 9). In 2000, Slovalco invested approximately \$3.9 million mainly for renovation and streamlining production processes and for health and safety improvements (Slovalco, 2001, p. 9).

Slovakia's only gold mining operation at Banská Hodruša was terminated in mid-2001. Slovenská banská spol. s.r.o., which mined the Svetozár gold ore deposit, ended production mainly because of depletion but also owing to a lack of working capital needed for exploration work (Balaz, 2002). Mined gold amounted to about 157 kilograms, or about 51% of that produced in 2000.

The cost of Slovakia's mining and pelletizing its iron ore was reported to be high and quickly increasing; the cost of roasting the siderite ore (30% iron) constituted about 40% of the value of pellet production. To reduce costs, the management of ELBA a.s., which was the country's sole mine producer of iron ore and was located at Spišská Nová Ves, sought to obtain credit during the year to redesign the pellet production line and to replace its rotary kilns with operationally less costly shaft furnaces. The output of iron pellets and concentrate declined by about 3% compared with that of 2000; it declined by about 2% in 2000 compared with that of 1999 (Balaz, 2002). Production of iron ore concentrate and pellets from domestic sources in 2001 was about 3% less than that of 2000 and satisfied less than 10% of the country's industrial needs. Slovakia's total resources of siderite amounted to about 97 Mt of which ore reserves totaled to about 26 Mt. Russia and Ukraine were Slovakia's main suppliers of iron ore and concentrate. Slovakia's imports from Russia and Ukraine in 2000 amounted to about 4.74 Mt. In terms of value, Russia and Ukraine supplied Slovakia with about 59.7% and 39.4% of its iron ore needs, respectively (Balaz and others, 2001, p. 57-58).

Having acquired the steelmaking portion of VSZ Kosice

(VSZ) in 2000, USX Corp. of the United States reported plans to raise its stake in VSZ to 80% from 25%. Final decision on this proposal, however, was to await the outcome of the due diligence report. Despite the loss of its steel-producing enterprise, VSZ continued to operate companies that serviced and maintained the steel-producing enterprise and organized its sales (Metal Bulletin, 2001c). Other developments in the steel sector included a report on a fivefold increase of profits by Zeleziarne Podbrezova a.s., which was expected to produce more than 250,000 t of hot- and cold-rolled pipes in 2001 (Metal Bulletin, 2001b).

Production declines of 10% and 4.6% were noted for petroleum and coal, respectively, compared with their output levels in 2000. Natural gas production increased by about 5%. Russia, which remained Slovakia's chief supplier of natural gas and petroleum, accounted for more than 98% of the country's imports of these fuels.

References Cited

- Balaz, Bartolomej, 2002, Slovak Republic, in *Mining annual review*: London, United Kingdom, Mining Journal Ltd. CD-ROM.
- Balaz, Peter, and others, 2001, Slovak Republic minerals yearbook: Geological Survey of the Slovak Republic, October, 207 p.
- Emerging Europe Monitor, 2002, Slovakia, in *Central Europe: Business Monitor International*, v. 9, no. 9, September, p. 6-7.
- Metal Bulletin, 2001a, EBRD and Norsk Hydro move closer to signing Slovalco deal: Metal Bulletin, no. 8560, March 22, p. 7.
- Metal Bulletin, 2001b, Profits return five at Slovak tubemaker: Metal Bulletin, no. 8574, May 14, p. 18.
- Metal Bulletin, 2001c, USX Corp plans to increase stake in VSZ Kosice: Metal Bulletin, no. 8666, April 12, p. 14.
- Slovalco, 2000, Annual report 1999: Ziar nad Hronom, Slovakia, Slovalco, February, 30 p.
- Slovalco, 2001, Annual report 2000: Ziar nad Hronom, Slovakia, Slovalco, February, 30 p.

TABLE 1
CZECH REPUBLIC: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1997	1998	1999	2000	2001
METALS						
Aluminum, secondary e/		45,000	45,000	40,000	40,000	20,000
Copper, refined, secondary e/		20,000	20,000	23,037	20,000	18,000
Gold metal	kilograms	--	--	3,207	3,000	2,000
Iron and steel:						
Iron ore:						
Gross weight	thousand tons	28	26	23	21	20 3/
Fe content e/		8,000	7,000	6,000	6,000	6,000
Metal:						
Pig iron	thousand tons	5,195	4,982	4,022	4,621	4,677 3/
Ferroalloys, total electric furnace e/	do.	1	1	1	1	1
Steel, crude	do.	6,495	6,498	6,107 r/	6,216	6,316 3/
Semimanufactures	do.	10,017	10,205	10,207	11,637	12,645 3/
Lead, metal, secondary		20,000	20,000	29,280	25,000 r/	25,000
Silver		--	--	24	25	25
Uranium, mine output, U content		624	611	605	498	500
Zinc: e/						
Mine output:						
Ore (Pb-Zn), gross weight		--	--	--		
Zn content of ore		--	--	--		
Concentrate, gross weight		--	--	--		
Zn content		--	--	--		
Metal, secondary		1,000	1,000	145	150	250
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	4,877	4,604	4,241	4,093	3,550 3/
Clays:						
Bentonite	do.	110	125	160	280	250
Kaolin	do.	2,982	3,049	5,183	5,573	6,300
Other	do.	759	1,030	1,070	1,120	1,350 3/
Diatomite		42,000	35,000	37,000	34,000	34,000
Diamond, synthetic e/	carats	5,000	5,000	5,000	5,000	5,000
Fertilizer, manufactured:						
Nitrogenous, N content		250,000	247,000	220,000	257,000	250,000
Phosphatic, P ₂ O ₅ content		400,000	80,000	100,000	100,000	100,000
Potassic, K ₂ O content		20,000	20,000	20,000	20,000	20,000
Mixed		500,000	100,000	77,000	75,000	75,000
Feldspar		243,000	266,000	244,000	337,000	410,000 3/
Gemstones, crude, pyrope-bearing rock		49,000	43,000	54,000	62,000	60,000
Graphite		25,000	28,000	22,000	23,000	23,000
Gypsum and anhydrite, crude		241,000	222,000	136,000	82,000	80,000
Lime, hydrated and quicklime	thousand tons	1,217	1,151	1,142	1,202	1,200
Nitrogen, N content of ammonia e/		250,700	250,000	250,000	250,000	250,000
Quartz		13,000	1,000	3,000	--	--
Salt e/		--	--	--	--	--
Sand and gravel:						
Common sand and gravel	thousand cubic meters	11,727	9,279	12,781	12,640	12,000
Foundry sand	thousand tons	769	815	717	829	700
Glass sand	do.	994	827	980	985	960 3/
Stone:						
Basalt (for casting)		103,000	96,000	89,000	14,000	15,000
Dimension stone	thousand cubic meters	258,000	305,000	300,000	320,000	280,000 3/
Limestone and other calcareous stones	thousand tons	11,304	11,558	11,703	11,808	11,800
Building stone	thousand cubic meters	10,845	9,528	9,442 r/	9,451 r/	9,000
Sulfur, byproducts, all sources e/		40,000	40,000	40,000	40,000	40,000
Sulfuric acid		333,000	327,000	350,000	350,000	350,000

See footnotes at end of table.

TABLE 1--Continued
CZECH REPUBLIC: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1997	1998	1999	2000	2001
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand tons	20,847	19,521	17,227	17,028	17,500
Brown and lignite	do.	58,142	51,953	45,370	51,063	51,000
Coke	do.	2,916	4,009	3,340	3,411	3,500
Fuel briquets from brown coal	do.	600	325 r/	288	253	250
Gas:						
Manufactured, all types e/	million cubic meters	800	800	800	800	800
Natural, marketed 4/	do.	118	137	143	118	115
Petroleum:						
Crude:						
As reported	thousand tons	159	172	176	168	160
Converted	thousand 42-gallon barrels	1,080	1,167	1,197	1,142	1,100
Refinery products e/	do.	27,000	35,000	35,000	35,000	35,000

e/ Estimated. r/ Revised.

1/ Table includes data available through March 2003. In addition to the commodities listed, arsenic, dolomite, illite, sodium compounds, sulfuric acid, talc, and zeolite are produced, but information is inadequate to make reliable estimates of output levels.

2/ Produced as a byproduct from noncopper ores.

3/ Reported figure.

4/ Includes gas produced from coal mines; gross output of natural gas is not reported, but is believed to exceed reported marketed output by an incosequential amount.

TABLE 2
CZECH REPUBLIC: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities 1/	Annual capacity
Bentonite	Keramost a.s.	Most	150
Cement	Bohemia, Cizkovice, Hranice, Karlov Dvor, Lochkov Pracovice, and Velary	Bohemia	3,500
Do.	Bystre, Malomerice, Mokra, Ostrava-Kunice, and Zahorie	Moravia	2,800
Clay, koalin	Mines in Karlovy vary area	West Bohemia	450
Do.	Mines in Plzen area	Central Bohemia	150
Coal:			
Bituminous	Mines in OKD coal basin	Ostrava-Karvina, north Moravia	22,100
Do.	Mines in KD coal basin	Kladno, central Bohemia	3,000
Brown	SHD administration	Most, northwest Bohemia	61,000
Do.	HDB administration	Sokolov, west Bohemia	17,000
Lignite	JLD administration	Hodonin, south Moravia	5,000
Copper, ore	Zlate Hory	North Moravia	300
Graphite	Grafit a.s. Rudne doly Stare Mesto-F s.r.o.	Netolice Stare Mesto	35
Mica	GARMICA s.r.o.	Netolice	5
Lead-zinc, ore	Horni Benesov and Zlate Hory	do.	400
Lead, metal, secondary, refined	Kovohute Pribram	Pribram	26
Natural gas	billion cubic meters Gasfields around Hodonin	South Moravia	25
Petroleum:			
Crude	Oilfields around Hodonin	do.	160
Refinery	thousand barrels per day Kolin, Kralupy, Pardubice, and Litvinov	Bohemia	200
Steel, crude	Nova Hut s.p. (Ostrava)	Kunice-Ostrava	3,800
Do.	Zelezarne Vitcovice	Vitkovice-Ostrava	900
Do.	Trinecke Zelezarny (Trinecke Iron and Steel Workss)	Trinec	3,000
Do.	Poldi United Steel Works	Kladno-Prague	1,700
Do.	Zelezarny Bila Cerkev	Hradek-Rokycany	300
Do.	Zelezarny Veseli, a.s.	Veseli and Moravou	300
Do.	Zelezarny Chomutov s.p.	Chomutov	350
Do.	Bohumin Iron and Steel Works	Bohumin	400
Titanium dioxide	Precheza A.S	Precheza	25
Uranium	DIAMO s.p.	Straz pod Ralskem	2

NA Not available.

1/ Names and locations of mines and crude oil refineries are identical.

TABLE 3
HUNGARY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/ METALS	1997	1998	1999	2000	2001
Aluminum:					
Bauxite, gross weight thousand tons	743	909	935	1,046	1,000 4/
Alumina, gross weight, calcined basis do.	76	138	295	357 r/	300
Metal:					
Primary	35,000	35,000	34,000	33,850 r/	35,000
Secondary	63,190	64,000	54,000 r/	55,000	50,000
Total	98,190	99,000	88,000	90,000	85,000
Copper, refined metal, including secondary e/	12,000 4/	12,000	12,000	12,000	12,000
Gallium, mine output metal content kilograms	--	--	--	--	--
Iron and steel, metal:					
Pig iron thousand tons	1,190	1,258	1,309	1,340	1,300
Ferroalloys e/ 5/	8,000	8,000	8,000	8,000	8,000
Steel:					
Crude thousand tons	1,829	1,940	1,813	1,969 r/	2,056 4/
Semimanufactures, rolled only do.	2,229	2,346	1,954	1,900	1,900
Manganese ore:					
Run of mine:					
Gross weight	57,000	34,000	41,000	41,000 r/	43,000 4/
Mn content e/	14,000	8,900 r/	11,000 r/	11,000 r/	11,500
Concentrate:					
Gross weight	15,291	15,000 e/	15,000	15,000	15,000
Mn content e/	5,000	5,000	5,000	5,000	5,000
Uranium, U ₃ O ₈ content	200	100	--	--	--
INDUSTRIAL MINERALS					
Cement, hydraulic thousand tons	2,811	2,999	2,978	3,358 r/	3,500
Clays:					
Bentonite:					
Raw	14,848	20,122	9,301	4,818	5,200 4/
Processed e/	9,000	12,000	6,000	2,000	2,500
Kaolin, raw and washed	10,000	10,000 e/	9,000	7,100 r/	8,000
Gypsum and anhydrite e/	150,000	135,000	222,000	251,000 r/	200,000
Lime, calcined thousand tons	498	500 e/	500	500 e/	500
Nitrogen, N content of ammonia e/ do.	250	250	250	250	250
Perlite	120,000	130,000	148,000	150,000	151,000 4/
Refractory materials, n.e.s.: e/					
Chamotte products thousand tons	20	20	20	20	20
Chrome magnesite products do.	5	5	5	5	5
Sand and gravel:					
Gravel e/ do.	10,000	8,160	10,297	13,490 r/	13,000
Sand:					
Common thousand cubic meters	284	250 e/	250	300	300
Foundry	72,537	243,000	175,000	173,000	168,000 4/
Glass	327,569	241,434	490,400	340,000 r/	339,000 4/
Stone:					
Dimension, all types e/ thousand tons	5,000	5,000	5,000	5,000	5,000
Dolomite do.	1,440	1,772	861 r/	787	800
Limestone do.	4,941	4,802 r/	382 r/	668 r/	700
Sulfur, byproduct, elemental, all sources e/	30,000	30,000	30,000	30,000	30,000
Sulfuric acid	84,463	85,000 e/	80,000	80,000	80,000
Talc e/	500 4/	500	500	500	500
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous thousand tons	924	877	738	744 r/	573 4/
Brown do.	6,552	6,008	5,207 r/	5,670 r/	5,384 4/
Lignite do.	8,089	7,610	7,696	7,862 r/	8,043 4/
Total do.	15,565	14,495 r/	13,641	14,276	14,000
Coke, metallurgical e/	650	650	650	650	650

See footnotes at end of table.

TABLE 3--Continued
HUNGARY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1997	1998	1999	2000	2001
MINERAL FUELS AND RELATED MATERIALS--Continued					
Fuel briquets thousand tons	214	250	250	200	200
Gas, natural, marketed million cubic meters	4,513	4,300	3,100	3,350 r/	3,280 4/
Peat, agricultural use e/ thousand tons	50	50	50	50	50
Petroleum:					
Crude:					
As reported do.	1,355	1,258	1,243	1,128 r/	1,059 4/
Converted e/ thousand 42-gallon barrels	9,100	8,400	8,400	7,500	7,000
Refinery products e/ 6/ do.	40,000	40,000	40,000	40,000	40,000

e/ Estimated. r/ Revised. -- Zero.

1/ Table includes data available through March 2003.

2/ Estimated data are rounded to three significant digits; may not add to totals shown.

3/ In addition to the commodities listed, diatomite and a variety of other crude construction materials, such as common clays, are produced, but available information is inadequate to make reliable estimates of output levels.

4/ Reported figure.

5/ Hungary is believed to produce some blast furnace ferromanganese.

6/ Excludes refinery fuel and losses.

TABLE 4
HUNGARY: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Alumina	Hungarian Aluminum Industrial Corp. (HUNGALU)	Ajka Timfoldgyar plant, about 120 kilometers southwest of Budapest, near Lake Balaton	400
Do.	do.	Almasfuzito Timfoldgyar plant near the Czech Republic border, 63 kilometers northwest of Budapest	240
Do.	do.	Moson-Magyarovar plant, in northwestern corner of Hungary, about 12 kilometers from Austrian and Czech borders	30
Aluminum, primary	do.	Inota plant, near Varpalota, 75 kilometers southwest of Budapest	46
Bauxite	HUNGALU: Bakony Bauxite Ltd.	Bakony District, extending roughly 100 kilometers northeast along Lake Balaton	1,500
Cement	Belpafatvalvi Cement es Meszipari Rt [Heidelberger & Schwenk (Germany) and Hungarian Group]	Belapatfalva, near Miskolc, 125 kilometers northeast of Budapest	1,100
Do.	Beremend Cement es Meszipari Rt [100% owned by Heidelberger & Schwenk (Germany)]	Beremend, 45 kilometers south of Pecs	1,090
Do.	Dunai Cement es Meszmu Kft [100% owned by Heidelberger & Schwenk (Germany)]	Vac, 50 kilometers north of Budapest	1,200
Do.	Hejocsabai Cement es Meszipari Rt [Holderbank (Germany) and Hungarian Group]	Hejoscaba, 150 kilometers northeast of Budapest	1,450
Do.	Labatlan Cementipari kft [100% owned by Holderbank (Germany)]	Labatlan, 20 kilometers north of Tatabanya	550
Clays	Agyag-Asvany Kft [Navan Resources PLC (Ireland)]	Felsopeteny, one underground and two open pit mines and a 5,000-ton-per-year processing plant; products: ball clay, kaolin, and refractory clay	35
Coal:			
Bituminous and lignite	Magyar Szenbanyaszati Troszt (MSZT) (Hungarian Coal Mining Trust)	Tatabanya and Oroszlany coal mining region, 45 kilometers west of Budapest	8,900
Do.	do.	Mecsek coal mining region, near Pecs and Komlo, north of the Yugoslav border	3,100
Do.	do.	Borsod coal mining region, 130 kilometers northeast of Budapest	5,200
Lignite	do.	Thorez opencast mine at Visonta, 80 kilometers northeast of Budapest	7,000

TABLE 4--Continued
HUNGARY: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Manganese		Orszagos Erc-es Asvanybanyak (National Ore and Mineral Mines)	Urkut manganese ore mines, 120 kilometers southwest of Budapest	160
Natural gas	million cubic feet	Hungarian Oil and Gas Co. (MOL)	Szeged and Algyo gasfields, southern Hungary	152,000
Do.	do.	do.	Hajduszoboszo gasfields, 180 kilometers east of Budapest	50,000
Do.	do.	do.	Smaller gasfields—Szank, Kardoskut, Bekes, Berefurdo, and others	39,000
Perlite		Perlit 92 Kft [Navan Resources PLC (Ireland) and Hungarian Group]	Open pit mine and processing plant in Palhaza, northeastern Hungary	150
Petroleum:				
Crude	million barrels	MOL	Szeged-Algyo field near Romanian-Yugoslav border (50% of total capacity)	7
Refined	do.	Danube Petroleum Refining Co. (subsidiary of MOL)	Szazhalombatta	55
Do.	do.	Tisza Petroleum Refining Co. (subsidiary of MOL)	Leninavaros	22
Do.	do.	Zala Petroleum Refining Co. (subsidiary of MOL)	Zalaegerszeg	4
Silica		Uveg-Asvany Kft [Navan Resources PLC (Ireland) and Hungarian Group]	Mine and plant at Fehevarosugo	660
Steel		Dunaferr Dunai Vasmu Rt	60 kilometers south of Budapest	1,400
Do.		OAM-Ozdi Acelmuevek Kft	120 kilometers northeast of Budapest	360
Do.		DAM-Diosgyori Acelmuevek es Kereskedelmi Kft	Diosgyoer, 145 kilometers northeast of Budapest	850

TABLE 5
POLAND: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/ METALS	1997	1998	1999	2000	2001
Aluminum,					
Primary	53,614	54,168	50,974	46,941	44,723
Secondary	2,100	2,700	6,100	3,100	2,900
Cadmium:					
Metal primary	22	--	--	6 r/	330
Oxide	62	61	27	-- r/	--
Copper:					
Ore:					
Gross weight	thousand tons	26,165	27,594	28,395	28,503
Metal content		464,600	490,892	523,120	525,000
Concentrate:					
Gross weight	thousand tons	1,660	1,750	1,900 e/	1,755 r/
Metal content		414,800	436,200	463,200	509,000
Metal:					
Smelter:					
Primary e/		416,200 r/	412,943 r/	472,084 r/	498,146 r/
Secondary e/		14,300 r/	19,300 r/	27,300 r/	19,700 r/
Total 3/		430,500	432,243	499,384	517,846
Refined, electrolytically, primary and secondary		440,600	446,837	470,494	486,002
Gold, metal, smelter 3/	kilograms	375 r/	409	489	367
Iron and steel:					
Pig iron:					
For foundry use	thousand tons	263	288	197	246 r/
For steel production	do.	7,032	5,841	5,036	6,246 r/
Total		7,295	6,129	5,233	6,492
Ferroalloys:					
Ferrochromium		6,200	4,200	--	--
Ferrosilicomanganese		20,000	15,100	10,000	19,000 r/
Ferromanganese:		47,500	50,152	100	-- 3/
Ferrosilicon		77,300	75,000	62,481	56,000 r
Other electric furnace ferroalloys		8,500	13,300	2,700	-- r/
Total electric furnace		112,000	107,600	75,181	75,000

See footnotes at end of table.

TABLE 5--Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1997	1998	1999	2000	2001
METALS--Continued					
Iron and steel--Continued:					
Steel, crude:					
From open hearth furnaces thousand tons	1,057	494	379 r/	424 r/	178
From oxygen converters do.	7,531	6,223	5,452	6,794 r/	5,822
From electric furnaces do.	2,994	3,197	3,022	3,290 r/	2,809
Other do.	2	2 r/	1	-- r/	--
Total do.	11,584	9,916	8,854	10,508	8,809
Semimanufactures:					
Hot rolled do.	7,803 r/	6,045 r/	6,433 r/	7,616 r/	6,599
Cold rolled do.	1,842 r/	1,652 r/	1,673 r/	1,826 r/	1,350
Pipe do.	538	500	484	483 r/	440
Lead:					
Pb-Zn ore, gross weight do.	4,938	5,052	5,068	4,500 e/ 3/	4,600
Mine output, Pb content of Pb-Zn ore	68,800	73,814 r/	81,849	67,800 r/	69,600
Mine output, Pb content of Cu ore	42,600	42,600	35,000	46,000 r/	52,000
Total Pb mine content	111,400 r/	116,414 r/	116,849	113,800 r/	121,600
Concentrate, gross weight	84,600	90,400	104,000 e/	84,400 r/	86,400
Pb content	54,800 r/	59,533	62,900 r/	51,200 r/	52,600
Metal:					
Smelter:					
Primary	29,600	28,700	31,000	29,700 r/	30,800
Secondary	43,700	50,500	53,600 r/	46,400 r/	39,500
Total	73,300	79,200	84,600	76,100 r/	70,300
Refined	64,800	64,300	63,985	55,900 r/	66,000
Palladium, average content of slimes e/ 7/ kilograms	12	12	12	12	12
Platinum, average content of slimes e/ 7/ do.	20	20	21	21	20
Selenium	76	67	67	65 r/	65
Silver, refined primary	1,038	1,108	1,100	1,144	1,190
Zinc:					
Mine output, Zn content	182,900	182,349	185,689	182,000 r/	172,300
Concentrate output, Zn content	158,300	157,874	154,800 r/	156,900 r/	152,700
Metal, refined, including secondary	170,600 r/	174,800 r/	178,900 r/	173,000 r/	174,700
INDUSTRIAL MINERALS					
Barite:					
Crude	2,300	--	--	--	--
Beneficiated	600	--	--	--	--
Cement:					
Clinker for cement thousand tons	12,739	11,974	11,678	11,559 r/	9,335
Hydraulic cement do.	15,003	14,970	15,555	15,046 r/	12,074
Portland cement do.	13,824	13,934	14,310	13,802 r/	11,115
Clays and clay products, crude:					
Bentonite	--	24,000	96,000	--	--
Fuller's earth	6,100	5,400	5,000	29,700 r/	29,000
Fire clay thousand tons	199	175	140	153	140
Kaolin:					
Crude do.	262	270	286 r/	344 3/	267
Beneficiated do.	84	82	89	99	129
Diamond, synthetic thousand carats	35	7	--	--	--
Diatomite	1,200	1,531	1,200	1,300 r/	1,000
Feldspar:					
Run of mine,	73,800 r/	26,500	9,000	54,000 r/	69,000
Processed, including imported material	108,100	116,700	120,100	165,200	220,600
Gypsum and anhydrite 5/ thousand tons					
Natural:					
Gypsum rock	900	863	926	997	794
Anhydrite	135	166	237	285	300
Total	1,035	1,029	1,163	1,282	1,094
Synthetic gypsum	583	674	860	1,140	1,134
Total gypsum and anhydrite	1,618	1,703	2,023	2,422	2,228
Lime, hydrated and quicklime do.	2,516	2,406	2,299	2,192 r/	1,954

See footnotes at end of table.

TABLE 5--Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1997	1998	1999	2000	2001
INDUSTRIAL MINERALS--Continued					
Magnesite:					
Ore, crude thousand tons	30,000	38,300	54,800	30,000 r/	23,000
Concentrate do.	29,600 r/	33,700 r/	38,800 r/	26,100 r/	22,200
Calcined	400	--	--	--	200
Nitrogen, N content of ammonia thousand tons	1,740 r/	1,299	1,151	1,208 r/	1,169
Salt:					
Rock do.	791	748	923	841 r/	787
Other do.	3,188	2,536	2,488	3,466 r/	3,543
Total do.	3,979	3,284	3,411	4,307	4,330
Sand and gravel, excluding glass sand:					
Aggregates:					
Mine output	67,678	72,073	84,639	88,514	73,107
Processed	61,616	64,192	71,196	73,588	62,634
Foundry sand do.	1,035	979	905	1,055 r/	1,564
Filling sand do.	14,155	13,695	11,352	9,298 r/	8,914
Lime-sand brick production sand thousand cubic meters	799	728	673	718 r/	492
Silica:					
Quartz and quartz crystal, processed	22,900 r/	19,500 3/	23,000 3/	52,200 r/	65,900
Quartzite, refractory, processed	204,600 r/	203,800 3/	171,700 3/	176,700 r/	114,200
Quartz schist	6,518	3,100	--	5,500 r/	5,500
Glass sand processed thousand tons	1,124	1,375	1,418	1,532 r/	1,423
Glass:					
Construction, flat do.	426	523	479 r/	427 r/	394
Technical do.	52	65	64	68 r/	54
Commercial do.	70	74	79	79 r/	81
Packing do.	873	918	928	976 r/	993
Sodium compounds, n.e.s.:					
Carbonate (soda ash), 98% do.	933	983	910	1,018	1,062
Caustic soda (96% NaOH) do.	718	807	737	394	348
Stone:					
Dolomite, mine output do.	5,781	5,679	1,861	2,204	1,639
Limestone, mine output for lime do.	13,136	11,950	12,373	13,858 r/	11,324
Limestone, mine output for non- lime end use do.	28,705 r/	28,364	28,914 r/	28,257 r/	24,289
Crushed and dimension stone, mine output do.	20,618	23,113	23,877	24,483 r/	22,466
Sulfur:					
Native, Frasch do.	1,676 r/	1,345 r/	1,175	1,369	942
Byproduct:					
From metallurgy do.	256	260	278	279 r/	277
From petroleum do.	44	60	74	131 r/	162
Total do.	300	320 r/	352	410 r/	439
From gypsum e/ do.	3 r/	-- r/	-- r/	-- r/	10
Total sulfur do.	1,979	1,665	1,527	1,779 r/	1,381
MINERAL FUELS AND RELATED MATERIALS					
Carbon black	25,000	22,600	18,700	12,500	15,100
Coal:					
Bituminous do.	137,793	115,726	111,894	103,331	103,992
Lignite and brown do.	63,169	62,820	60,839	59,484	59,557
Total do.	200,962	178,546	172,733	162,815	163,549
Coke, coke oven do.	10,536	9,944	8,575	8,972 r/	8,844
Fuel briquets, all grades do.	80	64	50	50	
Gas:					
Natural million cubic meters	4,836	4,852	4,757	4,956	5,175
Manufactured:					
Town gas do.	10	8	7	7 r/	6
Coke oven gas do.	4,414	4,209 r/	3,579	3,905 r/	3,851
Generator gas do.	400 e/	400	400 e/	400	300
Total do.	4,824 e/	4,617 r/	3,986	4,112 r/	4,157
Peat, fuel and agricultural thousand tons	206	243	310	380	325
Petroleum:					
Crude, as reported thousand tons	289	357	425	653	767
Refinery products 6/ do.	14,885	16,191	16,784	18,695 3/	18,680

See footnotes at end of table.

TABLE 5--Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES 1/

e/ Estimated. r/ Revised.

1/ Table includes data available through March 2003.

2/ In addition to the commodities listed above, antimony and germanium associated with polymetallic deposits and cobalt and nickel associated with copper ores are produced in quantities that so far have not warranted further recovery.

3/ Reported figure.

4/ Based on official Polish estimates.

5/ Includes building gypsum as well as an estimate for gypsum used in the production of cement.

6/ Includes virtually all major products.

7/ Estimates based on reported platinum and palladium-bearing final (residual) slimes and their average Pt and Pd content from electrolytic copper refining.

TABLE 6
POLAND: RESOURCES OF MAJOR MINERALS IN 2001

Commodity	Number of deposits		Geologically documented resources		
	Total	Exploited	Total 1/	Exploited 1/	+/- 2000 (percentage)
METALS					
Copper, ore	14	5	2,447	1,529	-1.5
Lead and zinc, ore	21	3	180	41	-1.6
INDUSTRIAL MINERALS					
Raw materials for chemicals:					
Sulfur, native	17	4	502	43	-0.4
Rock salt	20	4	80,389	8,464	-16.5
Barite	5	--	6	--	--
Potassium-magnesium salts	5	1	669	72	--
Raw materials for construction:					
Chalk	186	64	195	47	+1.0
Clay:					
Argillaceous material for construction ceramics	1,208	412	3,997	654	-0.3
Bentonite	8	1	3	1	--
Ceramic clays	28	7	142	11	-0.4
Refractory clays	18	5	57	8	--
Kaolin	14	2	216	84	+3.3
Dolomites	11	4	353	165	-1.0
Feldspar ore	7	2	89	12	--
Gypsum and anhydrite	15	4	269	121	-0.5
Magnesite	6	2	13	7	--
Sand and gravel:					
Filling sand	33	10	4,704	1,207	-0.2
Moulding sand	77	11	353	119	-0.5
Quartz sand for brick and concrete					
	158	52	727	153	+0.3
Gravel aggregates	4,455	1,598	14,436	3,185	-1.3
Silica:					
Glass sand	30	7	607	140	+0.2
Quartz, veined	7	3	7	6	-1.5
Quartzite, refractory	19	1	16	9	--
Stone:					
Stone for construction and road use	523	211	8,076	3,897	-0.5
Limestone and marl for lime and cement use	178	37	17,385	6,197	-0.4
MINERAL FUELS					
Coal:					
Bituminous	132	45	45,890	16,045	+1.2
Lignite	77	9	13,924	2,077	-0.4
Gas: 2/					
Natural	billion cubic meters	244	180	139	118
Coal methane	do.	44	18	91	12
Petroleum		85	72	13	12
					-6.0

1/ Million metric tons unless otherwise specified.

Sources: Central Statistical Office of Poland, 2002, Statistical Yearbook of Industry. Polish Academy of Sciences, 2002, Minerals Yearbook of Poland.

TABLE 7
POLAND: IMPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	Quantity	
	2000	2001
METALS		
Aluminum and articles thereof	303	310
Iron ore and concentrate	9,737	7,709
Steel:		
Flat-rolled, nonalloy semimanufactures	1,897	2,535
Stainless and articles thereof	79	84
Pipes and hollow profiles	259	289
INDUSTRIAL MINERALS		
Bentonite	62	65
Feldspar	82	114
Glass	429	466
Graphite	39	52
Mineral fertilizers	1,288	1,426
MINERAL FUELS		
Coal, including briquettes	1,503	1,903
Natural gas million cubic meters	7,676	8,325
Petroleum	18,002	17,513
Refined petroleum	399	435

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2001 and 2002; Polish Academy of Sciences, Minerals Yearbook of Poland, 1996-2001.

TABLE 8
POLAND: EXPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	Quantity	
	2000	2001
METALS		
Aluminum and articles thereof	216	230
Copper and copper alloys	284	233
Copper manufactures	149	143
Steel:		
Pig iron	138	41
Flat-rolled, nonalloy semimanufactures	2,185	2,219
Pipes and hollow profiles	178	202
Silver metric tons	1,042	1,094
Zinc	87	92
INDUSTRIAL MINERALS		
Cement	978	897
Glass	598	682
Salt	427	376
Sulfur	1,024	774
MINERAL FUELS		
Coal	23,247	23,032
Coke and semicoke	3,690	3,924
Refined petroleum	2,154	2,523

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2001 and 2002; Polish Academy of Sciences, Minerals Yearbook of Poland, 1996-2001.

TABLE 9
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2001 1/

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Aluminum:			
Primary	Huta Aluminium "Konin" S.A.	Konin	52.
Secondary	Zakłady Metalurgiczne "Skawina"	Skawina	20.
	Zakłady Metali Lekkich SA "Kety"	Kety	
	Zakłady Metalurgiczne "Trzebinia"	Trzebinia	
Barite 2/	Kopalnia Barytu "Buguszow" Sp. z o.o.	Boguszow, Stanislawow	40.
Cement:			
Do.	Zakłady Cementowo-Wapiennicze "Gorazdze" S.A.	Chorula	1,800 clinker, 2,400 cement.
Do.	Cementownia "Ozarow" S.A.	Ozarow	2,200 clinker, 2,400 cement.
Do.	Cementownia "Chelm" S.A.	Chelm	1,440 clinker, 2,640 cement.
Do.	Kombinat Cementowo-Wapienniczy "Warta" S.A.	Dzialoszyn	600 clinker, 1,150 cement.
Do.	Cementownia "Malogoszcz" S.A.	Malogoszcz	1,840 clinker, 1,800 cement.
Do.	Zakłady Cementowo-Wapiennicze "Nowiny" S.A.	Sitkowka	785 clinker, 1,070 cement.
Do.	Cementownia "Strzelce Opolskie" S.A.	Strzelce Opolskie	1,257 clinker, 1,630 cement.
Do.	Kombinat Cementowo-Wapienniczy "Kujawy" S.A.	Bielawy	900 clinker, 1,000 cement.
Do.	Cementownia "Rudniki" S.A.	Rudniki	840 clinker, 1,470 cement.
Do.	Cementownia "Wierzbica" S.A.	Wierzbica	759 clinker, 1,000 cement.
Do.	Cementownia "Nowa Huta" S.A.	Krakow	290 clinker, 1,100 cement.
Do.	Cementownia "Rejowiec" S.A.	Rejowiec	600 clinker, 845 cement.
Do.	Cementownia "Odra" S.A.	Opole	433 clinker, 800 cement.
Do.	Cementownia "Warszawa"	Warszawa (Warsaw)	600 cement.
Do.	Cementownia "Groszowice" Sp. z o.o.	Opole	304 clinker, 425 cement.
Do.	Cementownia "Polcement-Saturn"	Wojkowice	400 cement
Do.	Cementownia "Wiek"	Ogrodzieniec	710 clinker, 240 cement.
Do.	Fabrika Cementu "Wysoka"	Lazy	304 clinker, 425 cement.
Do.	Cementownia "Wejhorowie"	Wejhorowo	42 clinker, 45 cement.
Coal:			
Anthracite	Zakład Wydobywco Przetworczy Antracytu Walbrzych-Gaj	Lower Silesia	200.
Bituminous	Bytomska Spolka Weglowa S.A. Rudzka Spolka Weglowa S.A. Gliwicka Spolka Weglowa S.A. Katowicki Holding Weglowy S.A. Nadwislanska Spolka Weglowa S.A. Rybnicka Spolka Weglowa S.A. Jastrzebska Spolka Weglowa S.A. Seven independent mines Walbrzyskie Kopalnie Wegla Kamiennego KWK "Nowa Ruda" KWK "Bogdanka" S. A.	Upper Silesia (9 mines) do. (6 mines) do. (7 mines) do. (11 mines) do. (8 mines) do. (5 mines) do. (6 mines) do. Lower Silesia do. do.	140,000.
Lignite	KWK "Belchatow" KWK "Turow" KWK "Konin" KWK "Adamow" KWK "Sieniawa"	Belchatow Turow Konin Adamow Sieniawa	75,000.

See footnotes at end of table.

TABLE 9--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2001 1/

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Coke	Zakłady Koksownicze im. Powstanców Śl. Zakłady Koksownicze "Przyjaźń" Kombinat Kokschemiczny "Zabrze" Huta im. Sendzimira Huta "Częstochowa" Zakłady Koksownicze "Wałbrzych"	Upper Silesia do. do. do. (Kraków) do. (Częstochowa) Lower Silesia	12,000.
Copper:			
Ore, gross weight (1.2%-2.2% Cu)	Kombinat Gorniczo Hutniczy Miedzi (KGHM) Polska Miedz S.A. [KGHM, S.A.]	Lubin Mine, Lubin-Głogów District	8,760.
Do.	do.	Polkowice-Sieroszowice Mine, Lubin-Głogów District	12,775.
Do.	do.	Rudna Mine, Lubin-Głogów District	15,440.
Concentrate, gross weight (25.2%-25.9% Cu)	do.	Lubin beneficiation plant, Lubin-Głogów District	465.
Do.	do.	Polkowice beneficiation plant, Lubin-Głogów District	450.
Do.	do.	Rudna beneficiation plant, Lubin-Głogów District	700.
Metal, refined	do.	Refineries at Głogów I, Głogów II, and Legnica	480.
Feldspar	Strzeblowskie Kopalnie Surowców Mineralnych	Mine at Sobotka, Lower Silesia, workings at Pagórki Zachodnie and Pagórki Wschodnie	50.
Ferroalloys:			
Electric furnace (FeSiMn, FeMn, FeCr, FeSi)	Huta "Łaziska" S.A.	Upper Silesia at Łaziska Górne	170.
Blast furnace (FeMn)	Huta "Pokoń" S.A.	Upper Silesia, Ruda Śląska	90.
Gold kilograms	KGHM "Polska Miedz" S.A.	Refinery at Głogów "Trzebinia"	550.
Gypsum and anhydrite	Zakłady Przemysłu Gipsowego "Dolina Nidy" Zakład Gipsowy "Stawiany" Kopalnia Anhydrytu "Nowy Łódź" KGHM "Polska Miedz" S.A.	Southeastern Poland, Gacki Southeastern Poland, Szarbków Lower Silesia, Niewice Lower Silesia, Iwiny	1,400.
Helium million cubic meters	Zakład Odazotowania Gazu	Western Poland, Odolanów	3.
Kaolin	KSM "Surmin-Kaolin" S.A.	Lower Silesia, Nowogrodziec	50.
Lead-zinc:			
Concentrate	Zakłady Gorniczo-Hutnicze (ZGH) "Bolesław" Zakłady Gornicze "Trzebinia" S.A.	Mines and concentrators at Olkusz and Pomorzany, Bukowno region Mines and concentrator at Trzebinia	60 Pb, 160 Zn.
Metal:			
Pb, refined	Huta Cynku "Miasteczko Śląskie"	Refinery at Miasteczko Śląskie	60.
Do.	Huta Metali Nieżelaznych "Szopienice"	Katowice	35.
Zn, refined	Huta Cynku "Miasteczko Śląskie"	Imperial Smelter at Miasteczko Śląskie	60.
Do.	Zakłady Metalurgiczny "Silesia" (input from Huta "Miasteczko Śląskie")	Refinery at Katowice	(30).
Do.	Zakłady Gorniczo-Hutnicze "Bolesław"	Refinery at Bolesław	65.
Do.	Huta Metali Nieżelaznych "Szopienice"	Katowice	28.
Lime	In order of size: Zakłady Przemysłu Wapienniczego Trzuskawica Śląskie Zakłady Przemysłu Wapienniczego Opolew S.A. Zakłady Przemysłu Wapienniczego Bukowa Kombinat Cementowo-Wapienniczy Kujawy S.A. Zakłady Cementowo-Wapiennicze Gorazdów S.A. Zakłady Cementowo-Wapiennicze Nowiny	Kieleckie County, Świętokrzyskie Mountains Opole County Kieleckie County, Świętokrzyskie Mountains Bydgoskie County Opole County Kieleckie County	4,500.

See footnotes at end of table.

TABLE 9--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2001 1/

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Lime--Continued:	Produkcyjno-Handlowo-Uslugowe Wapno-Sabinow Wojcieszowskie Zaklady Przemyslu Wapienniczego Sp. z o.o. Zaklady Przemyslu Wapienniczego w Sulejowie Zaklad Wapienniczy w Plazie	Czestochowa County Jeleniogorskie County Piotrkowskie County Katowickie County	
Natural gas million cubic meters	Ministry of Mining and Energy	Gasfields at pre-Carpathian foothills, Carpathian Mountain Lowlands, near Ostrow Wielkopolski, Poznan, and Trzebnica, north of Wroclaw	4,900.
Nitrogen:			
Ammonia (NH ₃)	Zaklady Azotowe "Pulawy" S.A. Zaklady Azotowe "Kedzierzyn" S.A. Zaklady Azotowe "Wloclawek" S.A. Zaklady Azotowe S.A. w Tarnowie Zaklady Azotowe S.A. w Chorzowie Zaklady Chemiczne "Police"	Pulawy in eastern Poland Kedzierzyn in Upper Silesia Wloclawek in central Poland Tarnow in southern Poland Chorzow in Upper Silesia Police in northwest Poland	2,400.
Fertilizer (N)	do.	do.	1,700.
Petroleum :			
Crude	Polskie Gornictwo Naftowe i Gazownictwo Warszawa	Oilfields in northern and northwestern lowlands; sub-Carpathian region and Carpathian Mountains	200.
Do.	Predsiębiorstwo Poszukiwan i Eksploatacji Rpy i Gazu "Petrobaltic"	Baltic Sea Shelf	100.
Refined	"Petrochimia-Plock" Rafineria "Gdansk" Rafineria "Czechowice" Rafineria "Trzebinia" Rafineria "Glimar" Gorilice Rafineria "Jedlicze" Podkarpackie Zaklady Rafyneryjne w Jasle	Plock in central Poland Gdansk in northern Poland Czechowice in southern Poland Trzebinia in southern Poland Gorilice in southern Poland Jedlicze in southern Poland Jaslo in southern Poland	13,500.
Salt, all types	Inowroclawskie Kopalnie Soli S.A. Kopalnia Soli "Klodawa" Kopalnia Soli "Wieliczka" Kopalnia Soli "Bochnia" KGHM "Polska Miedz" S.A. Kopalnia Wegla Kamiennego "Debiensko" Janikowskie Zaklady Sodowe "Janikosoda" S.A.	Gora, Mogilno I, and Mogilno II mines at Inowroclaw in central Poland Klodawa in central Poland Wieliczka in southern Poland, near Krakow, mining deposits at Barycz and Wieliczka Southern Poland, mines at the Lezkowice and Siedlec-Moszczenica-Lapczyca deposit; not known to have operated in 1999 Sieroszowice in southwestern Poland Debiensko, Upper Silesia Janikowo in central Poland	6,500.
Selenium	Huta Metali Niezelaznych "Szopienice" KGHM "Polska Miedz" S.A.	Katowice Refinery at Glogow	80.
Silver	KGHM "Polska Miedz" S.A. Zaklady Metalurgiczne Trzebinia	Refined from dore produced by the Szopienice Pn-Zn smelter-refinery largely from KGHM- supplied slimes	1.
Steel:			
Crude and semimanufactures	Huta Katowice S.A. Huta im. T. Sendzimir S.A. P.P. Huta "Zawierciu" Huta Czestochowa S.A. Huta "Ostrowiec" S.A. P.P. Huta "Labedy" Huta "Lucchini-Warszawa" Sp. z o.o.	Plant at Dobrowa Gornicza, producing pig iron, crude steel, hot rolled- products, and cast stell Steelworks at Krakow, producing pig iron, crude steel, hot-rolled products, cold-rolled products, pipes, and cast iron Steelworks at Zawierciu, producing crude steel, hot-rolled products, cast iron, and cast steel Steelworks at Czestochowa, producing pig iron, crude steel, hot rolled sheets, pipes, and cast iron Steelworks at Ostrowiec-Swietokrzyski, producing crude steel and hot-rolled products Steelworks at Gliwice, producing crude steel, and hot-rolled products Steelworks in Warsaw, producing crude steel, hot-rolled products, and cold-rolled strip	14,000 (crude).

See footnotes at end of table.

TABLE 9--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2001 1/

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Steel--Continued			
Crude and semimanufactures-- Continued:	Huta Florian S.A.	Steelworks in Swietochlowicach, producing crude steel, hot-rolled products, galvanized sheet,	
	Huta "Stalowa Wola" S.A.	Steelworks at Stalowa Wola, producing crude steel	
	Huta "Jednosc" S.A.	Steelworks at Siemianowice Slaskie, producing crude steel, hot-rolled products, and pipes	
	Huta "Batory" S.A.	Steelworks at Chorzow, producing crude steel, hot-rolled products, and pipes	
	P.P.Huta "Baildon"	Steelworks in Katowice, producing crude steel, hot-rolled products, cold-rolled strip, and cast steel	
	Huta "Malapanew" S.A.	Steelworks at Ozimek, producing crude steel and cast steel	
	Huta "Zabrze" S.A.	Steelworks at Zabrze, producing crude steel, cast iron, and cast steel	
	Huta "Zygmunt" S.A.	Steelworks at Bytom, producing crude steel, cast iron, and crude steel	
Semimanufactures only	Huta Cedler S.A.	Steelworks in Sosnowiec, producing hot-rolled products, cold-rolled strip, and cast iron	
	P.P. Huta "Kosciuszko"	Steelworks at Chorzow, producing hot-rolled products	
	Huta "Pokoj" S.A.	Steelworks at Ruda Slaska, producing hot-rolled products	
	Huta "Andrzej" S.A.	Steelworks at Zawadskie, producing pipes	
	Huta "Ferrum" S.A.	Steelworks in Katowice, producing pipes	
	P.P. Huta "Bobrek"	Steelworks in Bytom, producing pig iron, hot-rolled products and cast iron	
	Huta "Buczek" S.A.	Steelworks in Sosnowiec, producing pipes and cast iron	
	P.P. Huta "1 Maja"	Steelworks in Gliwice, producing hot-rolled products	
	Zaklad Wielkopiecowy "Szczecin" Sp. z o.o.	Steelworks at Szczecin, producing pig iron	
Sulfur	P.P.Kopalne i Zaklady Przetworcze Siarki "Siarkopol"	Operations at Tarnobrzeg, mining the Jeziorko-Grebow-Wydza deposit.	5,700.
	P.P. Kopalnie i Zaklady Chemiczne Siarki "Siarkopol"	Operations at Grzybow, mining the Osiek and Grzybow-Gacki deposits.	

1/ The data presented in this table was compiled, in large measure, from information provided in the Minerals Yearbook of Poland (Bilans Gospodarki Surowcami Mineralnymi w Polsce Na Tle Gospodarki Swiatowej 1995) prepared and published by the Department of Mineral and Energy Policy, Mineral and Energy Economy Research Centre of the Academy of Science of Poland, Ministry of Environmental Protection, Natural Resources, and Forestry. Additionally, very valuable information and criticism were provided by Mr. Krystof Galos and other members of this academic department.

2/ The production of barite at the "Boguszow " barite mine was stopped in 1997 because of large-scale area flooding and its future status is uncertain.

TABLE 10
SLOVAKIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1997	1998	1999	2000	2001
METALS						
Aluminum:						
Alumina e/		100,000	100,000	100,000	109,813 r/	110,078 3/
Aluminum ingot, primary		127,182	135,000	127,000 r/	136,753 r/	133,672 3/
Copper:						
Mine output:						
Ore, Cu content		72	155	-- r/	--	-- 3/
Concentrate, gross weight		314	676	-- r/	--	-- 3/
Metal, refined, primary and secondary e/		55 r/	21,626 r/	1,432 r/	1,500 e/	1,500
Gallium metal e/	kilograms	600	600	500	500	500
Gold metal	do.	458	340	363	306	157 3/
Iron and steel:						
Iron ore:						
Gross weight	thousand tons	970	899	891	909 r/	900
Fe content	do.	250	300 r/	300 r/	300	300
Concentrate, Fe content	do.	453	479	465 r/	477 r/	435 3/
Metal:						
Pig iron	do.	3,072	2,756	2,987 r/	3,166 r/	3,255 3/
Ferroalloys, total electric furnace 4/	do.	95	95 e/	95 e/	95	95
Ferrochromium		11,394	11,785	6,986	17,702 r/	15,000
Ferrosilicon e/		50,133	49,963	70,000	50,000	50,000
Steel, crude	thousand tons	3,484	3,178	3,569 r/	3,733 r/	3,989 3/
Semimanufactures e/	do.	3,600	3,500	3,500	3,500	
INDUSTRIAL MINERALS						
Barite concentrate		62,102	14,880	15,900	13,700	15,000
Cement, hydraulic	thousand tons	3,136	2,875	4,718 r/	3,045 r/	3,123 3/
Clays:						
Bentonite		79,760	81,010	64,390	66,528 r/	82,915 3/
Kaolin		22,720	14,580	22,930	32,000 r/	30,000
Refractory		3,000	12,000	3,000	2,000 r/	3,000
Diamond, synthetic e/	carats	5,000	5,000	5,000	5,000	5,000
Dolomite	thousand tons	1,989	1,796	1,505	1,176 r/	1,471 3/
Gypsum and anhydrite, crude		116,000	128,000	117,000	124,000 r/	169,000 3/
Lime, hydrated and quicklime	thousand tons	685	744 r/	759 r/	754 r/	816 3/
Magnesite, concentrate		863,600	877,840	918	1,000	447 3/
Nitrogen, N content of ammonia e/		250,000	250,000	250,000	215,000 r/	209,000 3/
Perlite		25,020	24,240	19,460	17,020	15,000 3/
Salt		126,800	100,470	119,000	121,700	123,000 3/
Sand and gravel	thousand cubic meters	1,872	1,906	1,469	1,271 r/	1,300
Stone:						
Limestone and other calcareous stones for cement	thousand tons	7,800	7,200	7,000	6,700 r/	6,500
Crushed stone	thousand cubic meters	3,510	4,318	2,844	2,868 r/	3,000
Talc		6,100	2,820	1,900	1,800	2,600 3/
Zeolite		14,000	10,000	14,000	15,000 r/	15,000
MINERAL FUELS AND RELATED MATERIALS						
Coal, brown and lignite	thousand tons	3,942	3,966	3,745	3,589 r/	3,424 3/
Coke						
Metallurgical	do.	1,708	1,730	1,515	1,500	1,500
Unspecified e/	do.	200	200	200	200	200
Natural gas	million cubic meters	309	311	235	202 r/	212 3/
Petroleum:						
Crude:						
As reported	thousand tons	63	61	59	60	54 3/
Converted	thousand 42-gallon barrels	426	400 e/	400 e/	400	400
Refinery products e/	do.	40,000	40,000	40,000	40,000	40,000

e/ Estimated. r/ Revised. -- Zero.

1/ Table includes data available through March 2003. In addition to the commodities listed, arsenic, diatomite, feldspar, illite, sodium compounds, sulfur, sulfuric acid, and talc are produced, but information is inadequate to make reliable estimates of output.

2/ Estimated data are rounded to no more than three significant digits.

3/ Reported figure.

4/ May include some FeCrSi and FeNi, if any was produced.

TABLE 11
SLOVAKIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand of metric tons unless otherwise specified)

Commodity	Major operating companies 1/	Location of main facilities 2/	Annual capacity
Aluminum	ZSNP Aluminum Works (Slovalco)	Ziar and Hronom, central Slovakia	60
Antimony:			
Ore	Liptovska Dubrava	Central Slovakia	50
Do.	Pezinok	Western Slovakia	50
Smelter	Vajskova	Central Slovakia	2
Cement	Lietavska Lucka, Stupava, and Turna	Slovakia	5400
Coal:			
Brown	Hornonitranske Bane, a.s.	Prievidza, central Slovakia	3,500
Do.	Bana Dolina, a.s.	Vlky Krtis, southern Slovakia	500
Lignite	Bana Zhorie, a.s.,	Holic, Western Slovakia	400
Copper:			
Ore	Slovinky, Hodrusa-Hamre, and Rudnany	Central Slovakia	500
Refinery	Krompachy	do.	27
Gallium kilograms	ZSNP Aluminum Works	Ziar and Hronom, central Slovakia	4000
Iron:			
Ore	Nizana Slana and Rudnany	Central Slovakia	1600
Concentrate	do.	do.	1300
Lead-zinc, ore	Banska Stiavnica	do.	200
Magnesite	SMZ a.s. Jelsava	Eastern Slovakia	350
Do.	Slovmag a.s., Lubenik	Central Slovakia	150
Petroleum, refinery	Bratislava, Dubova	Slovakia	NA
Salt	Solivary a.s., Presov	Eastern Slovakia	150
Steel, crude	VSZ HOLDING, a.s., formerly Vychodoslvenske Zeleziarne sp (East Slovak Iron and Steel Works)	Eastern Slovakia, Kosice	4000
Do.	Zeleziarne Podbrezova a.s.	Slovakia, Podbrezova	600

NA Not available.

1/ All mining companies are Government-owned.

2/ Names and locations of mines and crude oil refineries are identical.